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PRINTING Equipment ENGINEER

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A Technical Publication for the Mechanical Executive Responsible for Printing Production, Equipment and Supplies in the Commercial, Magazine, Private Plant and Daily Newspaper Field.

The Double Spread Newspaper Plate Matching Problem

By SHERMAN IRISH*

*Mechanical Superintendent, Quincy (Ill.) *Herald-Whig*.

IN THE Quincy *Herald-Whig* we carry from time to time double-page spreads. Some of our advertisers lay out the advertisements so that cuts and boxes are positioned in the center of the advertisements. We have received copy containing 6 pt. to be put in a box to be located in the center of a double-page advertisement. This means that it is almost impossible to obtain a perfect match at the joint where the two pages come together.

To eliminate the trouble we were having in matching plates on double-page advertisements we are setting the pages and casting plates so they will join off-center on the press, *i.e.*, we cast the plates of different widths.

For instance, in the illustration is shown the center section of a double-page advertisement which was printed recently in the *Herald-Whig*. The plates were cast with 8½ columns on one page and 7½ columns on the other.

In the case of our own equipment, the limit for casting off-center plates would be 9 columns on one page and 7 columns on the other page. It is preferable to cast the left-hand plate wider than the right-hand plate.

Here is shown a section of center spread advertisement which appeared recently in the Quincy (Ill.) Herald-Whig. *The normal center plate-matching line is indicated by the dash line. Since some of the* Herald-Whig's *advertisements carry halftones and boxes in the center of the spread, it is obvious that perfect matching of the plates containing such matter is impossible. Mechanical Superintendent Sherman Irish describes how off-center plates, or plates of different widths, have overcome the problem.*

To finish the matching of the plates we are using the Robinson Utility Bit[1] on our curved router. We use a double-plate casting ring in the casting box and hold the mat back to cast a little more metal on the plate. It is possible, however, to use the regular ring, but in doing it just that much more metal must be cut off on the router. With the double-plate ring two cuts on the router completes the job of trimming.

To insure a straight cut on the router, it is necessary to put a set screw in the sliding bar to hold the cutting tool steady while turning the router cylinder. Also, the up-and-down movement of the router cylinder must be locked to the *up* position to insure the same thickness of lip (or overhang) to facilitate lockup of the clips on the press cylinder.

This work can only be done on double-width presses having sliding clips, although some makes of single-width presses are equipped with sliding center clips.

[1]Can be obtained from Burgess Cellulose Co.

Clogged Crucible Throats

With reference to the illustrated article *Clogged Crucible Throats* which appeared on page 32 of the August issue, I want to offer my experience on the subject. In South Dakota where, until recent years, many line-composing operators have learned to operate without instruction, the practice of allowing the metal pot to run low and the feeding of slugs directly into the crucible has been quite common. However, I have not found a crucible throat clogged where the metal has been maintained near standard. This leads me to believe that only contaminated or poorly balanced metal will clog the crucible throat.

E. B. Harding,
South Dakota State College,
Dept. of Printing and Rural Journalism.

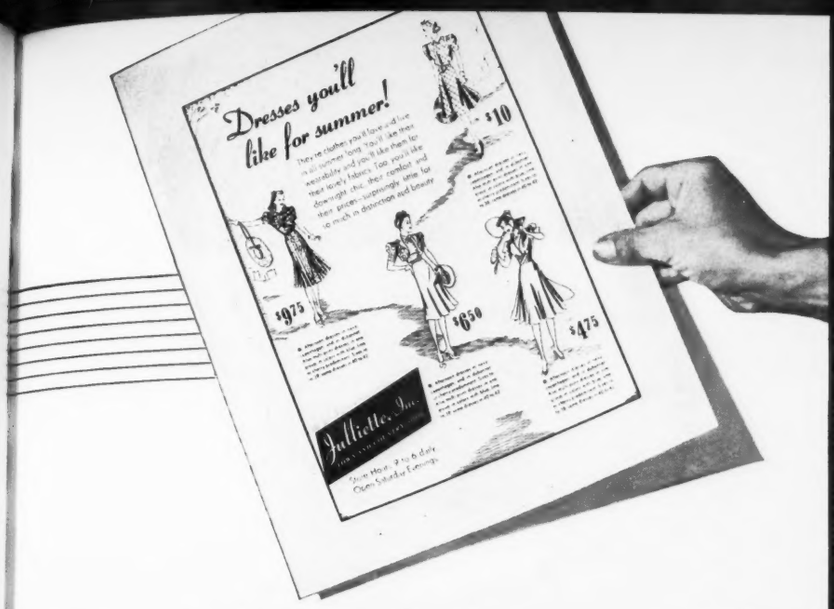
Ever Earn $30,000 in One Day for Your Printing Plant?

By W. F. SCHAPHORST, M. E.

MANY a printing plant executive has earned money at the rate of one million dollars per year for his company, but very likely has failed to give that point so much as a thought.

For example, if you should spend an entire day with an important manufacturer's representative, or, if you should devote an entire day to reading literature on important money-making or saving equipment for your plant, and as a result you decide to install new equipment of the modern type, thereby earning or saving $30,000 per year (which is not an exaggeration) you could truthfully say that you actually earned $30,000 in one day for your company.

However, here is another point. After once installing first class printing equipment it is usually good for, let us say, 10 years, barring "violent" obsolescense. In that case, the single day's work would amount to earnings of $300,000 over the 10 year period.

What I want to emphasize here is the fact that printing plant executives often do make decisions or succeed in selling an idea to their superior officers that are extremely important in dollars and cents. Translated into earnings per year substantial sums may enter.

Real Flexibility with Elrod-cast Base

How does your composing room handle time-killing ads like the one illustrated above? Typical of complicated composition frequently coming through the newspaper composing room, this advertisement required a full-size zinc line cut, which could not be cut apart because of "tie-ins," to be combined with ten separate blocks of type.

Illustrations at the right demonstrate the handling of this ad in an efficient, modern composing room, doing away with the need for costly and difficult mortising, or piecing and fitting together of mounting material. The picture at the top shows the ad in a newspaper chase, as completely made up by the compositor, with all portions, except the type blocks, filled in with long strips of Elrod-cast .854-inch height base material. Blocks of slugs were easily and accurately positioned by cutting through one or more of the full length strips of Elrod base material.

This method provides the utmost flexibility and satisfaction in make-up, as blocks of type and base for supporting cuts can be placed easily in any required position. Elrod strip material base is also practical for use in news columns as well as in advertisements to mount all kinds of plates.

The middle illustration shows the zinc cut, routed through the metal for type blocks, ready to be positioned on the base, and the bottom illustration pictures the cut in place, held by a few spots of cement to prevent shifting during the mat making. All units are level and rigidly supported.

Specimens of Elrod base and other Elrod products and literature descriptive of Elrod equipment and its operation will be sent on request.

Ludlow Typograph Company

2032 Clybourn Avenue · · · · · Chicago, Illinois

Ad made up with sluglines and Elrod base, ready to receive line cut

Unmounted cut, routed through, ready to be placed on base

Complicated ad, produced without mortising—all units level and rigidly supported for stereotyping →

SET IN LUDLOW RADIANT BOLD EXTRA CONDENSED AND RADIANT MEDIUM

More Profits for You — *with* Christensen Equipment

For a profitable visit at the Show — see the new **Christensen Continuous Suction Stream Feeder** *in action*

Are you interested in a Feeder that offers these advantages . . . *to help you get a paying share of today's business . . . and make your customers boosters?*

1. **A feeder that** doesn't limit the speed at which your presses operate, but feeds sheets in time with your fastest presses?

2. **A feeder that** *improves register* by presenting sheets to front guides of press at a sheet speed of but 10 to 15 inches per cycle, or impression?

3. **A feeder that** feeds sheets in underlapped relation in slow motion, and requires no top rods, mechanical slow-downs, or other sheet-controlling devices . . . thus reducing "down-time" on press-and-feeder unit, and increasing volume of production?

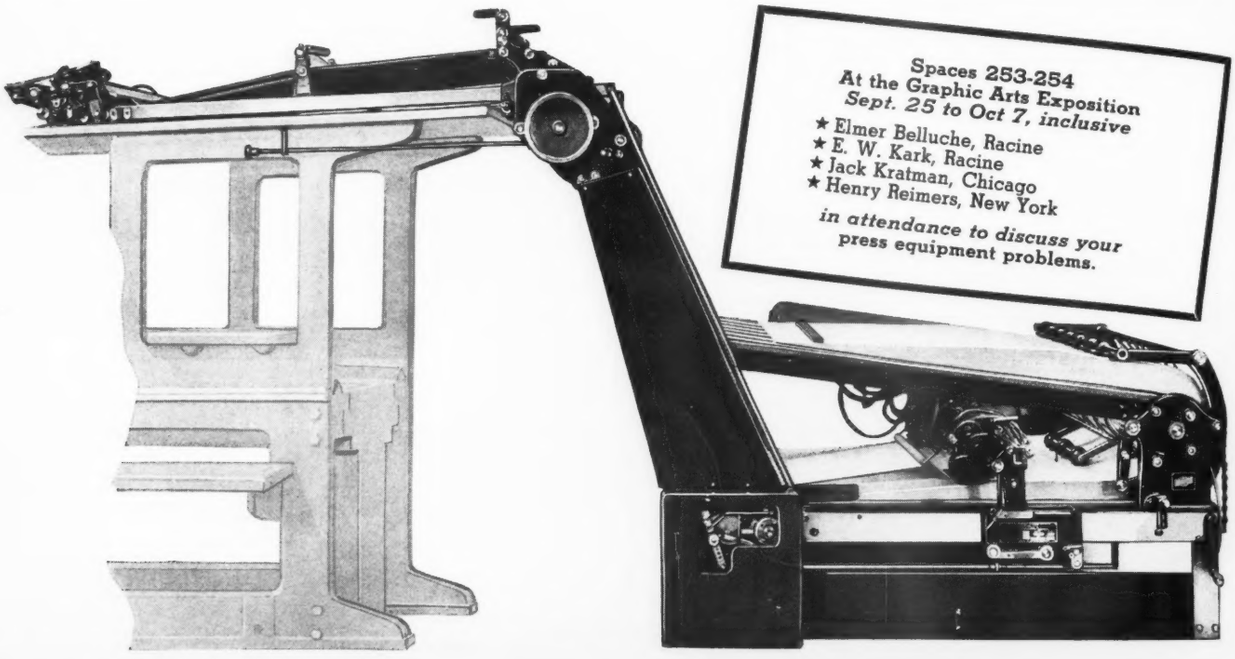
4. **A feeder that** isunusually accessible, because loading board is at bench height with entire separating unit on the floor (no platforms necessary, no slow, hazardous climbing to load or to make settings and adjustments)?

5. **A feeder that** *automatically* makes practically all adjustments, for varying conditions of stock that must be separated and fed?

6. **A feeder that** carries sheets vertically from separating unit to feed board, removing loose scraps of paper and most of paper dust ordinarily carried into press . . . thus reducing chances of battered plates and packing, and, in turn, additional wash-ups?

7. **A feeder that** *combines* the advantages of the Pile Suction and Continuous Type feeders?

★ *Of course you're interested* in this most advanced development in feeder design, just as you should be in *any* equipment that helps you *make more money*. So be sure to inspect the new Christensen Continuous Suction Stream Feeder (shown for the first time) *in actual operation* at the Show. Also see the other modern Christensen equipment. If you are not planning to be in New York, write today for free bulletin on the new Christensen Continuous Suction Stream Feeder.



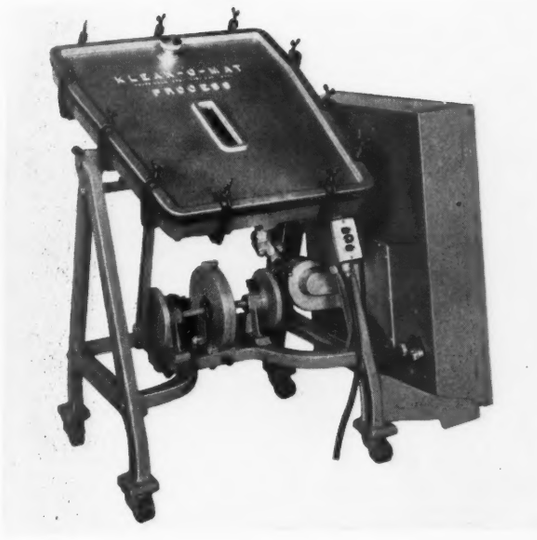
Spaces 253-254
At the Graphic Arts Exposition
Sept. 25 to Oct 7, inclusive

★ Elmer Belluche, Racine
★ E. W. Kark, Racine
★ Jack Kratman, Chicago
★ Henry Reimers, New York

in attendance to discuss your press equipment problems.

THE CHRISTENSEN MACHINE COMPANY
100 FOURTH STREET. RACINE. WISCONSIN
BRANCH OFFICES AND DISTRIBUTORS IN UNITED STATES AND CANADA

Klean-O-Mat Shows The Way



- to safe cleaning . . . . .
- the right way.

The one best way to clean brass . . . by washing . . . can now be SAFELY done by the Klean-O-Mat Process. Formerly careful composing room machinists had to side-step the "washing" method. Caution has dictated against cleaning mats by solution for reasons of safety . . . mechanical and chemical.

Running mats out on a tray; dumping them into a pan or bucket; sloshing them around in the solution, or stirring with a stick . . . is too rough a method . . . dangerous to combinations, to delicate side-walls and "false-walls." Chemicals and "acids" have been too harsh and caustic. They have gone beyond their cleaning function and attacked the metal. Poor "face" has resulted . . . and "hair-line" caused by eating away of the fragile brass side-walls and scoring off of the "false-walls."

Consequently, *erasing* dirt off . . . with rubber or buffing brush . . . has been the alternative over the years. But this has been no more than a make-shift . . . a compromise with safety. It has left important surfaces of the mat . . . the rails and the casting die . . UNTOUCHED.

Klean-O-Mat Answers a Demand as Old as the Line-casting Machine Itself

The Klean-O-Mat Process *combines* the three essentials of a cleaning method. RAPID CLEANING—made possible by the machine method which cleans and dries a font of mats and the magazine in thirty-five minutes . . . *without running out the mats.* PERFECT CLEANING—because the brass is *washed* free of all dirt and oxide film . . . even innermost surfaces. SAFE CLEANING—mechanically, because mats are protected throughout the cleaning by remaining in their channels; chemically, because Klean-O-Mat solutions have no detrimental effect on the brass, or on the "false-walls."

Certified Safety

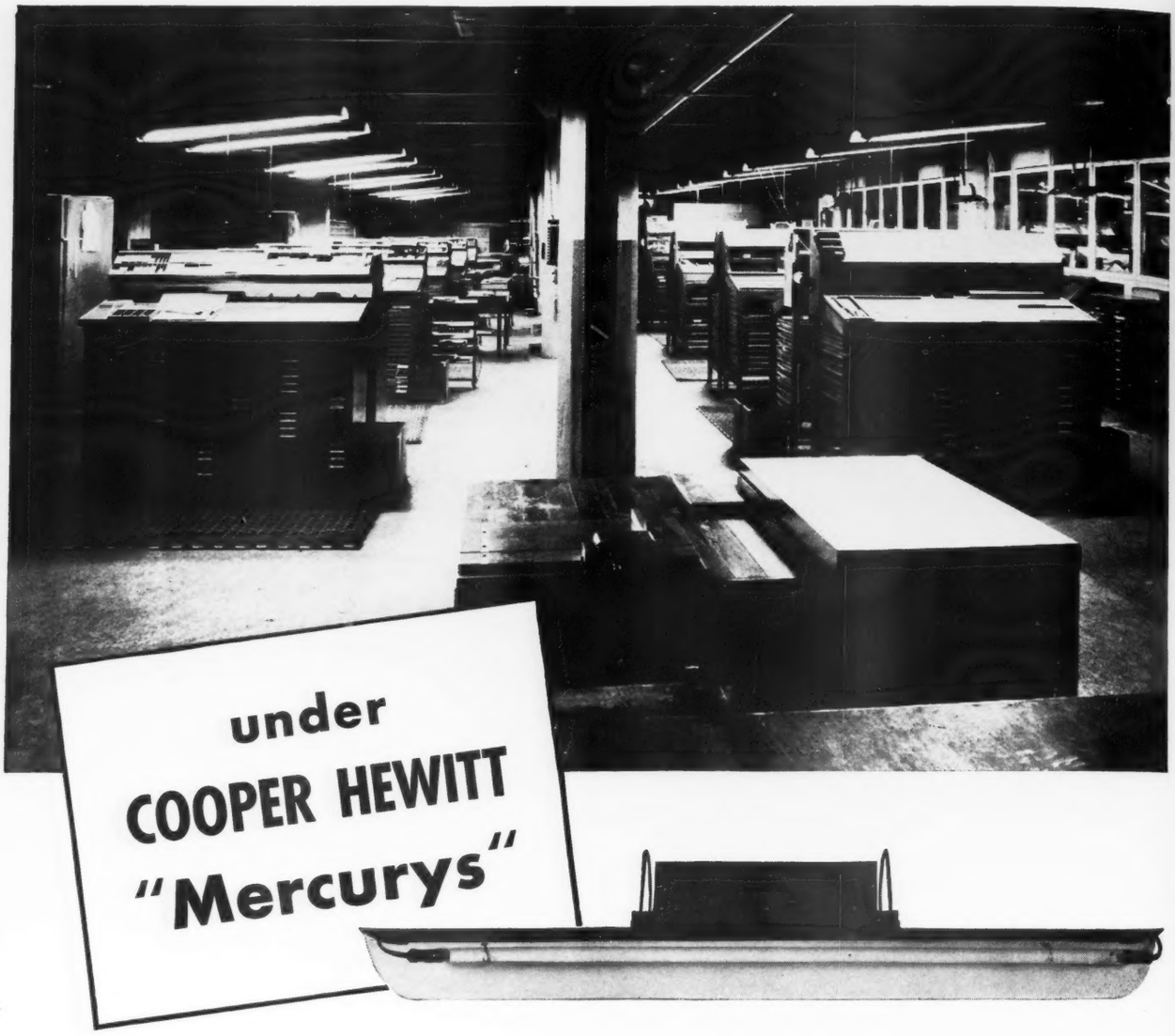
Klean-O-Mat offers safety—CERTIFIED. This cleaning process, which was introduced on January 1st, 1938, has been approved as safe by the research departments of both the Linotype Company and the Intertype Corporation, following exhaustive tests, separately made. These investigations proved out all effects of cleaning by this method and measured them against standard specifications for *true* safety. The object of these tests was not to determine what one or two . . . or even eight or ten . . . cleanings would develop in their effect on the brass, but wha cumulative and total effects would result were this method to be followed regularly . . . to clean mats *throughout their normal life-time.* Would service of the font be impaired in any way . . . or its ordinary life span reduced . . . as a consequence of *thirty* exposures of the casting die, thin side-walls or important-to-preserve "false-walls" to such cleaning? On every single score Klean-O-Mat came through with flying colors. We will be glad to send a detailed summary of these tests to any executive who writes us.

- *Don't forget that Klean-O-Mat cleans keyboard cams, escapements and channel entrances, as well . . . in the same jig time. There is a Klean-O-Mat machine model for every size of plant.*

KLEAN-O-MAT CORPORATION

60 East 42nd St. **New York City, U. S. A.**

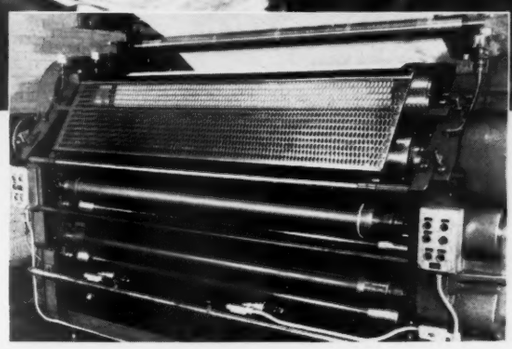
200 footcandles...WITHOUT GLARE



The long-tube Cooper Hewitt Mercury lamp makes it possible to obtain high levels of illumination without the presence of direct or reflected glare. In this composing room, an illumination level of approximately 200 footcandles is maintained on the working plane. Yet, the glareless, detail-revealing mercury light makes it possible to see "down into the type" with ease. In fact, one worker here reported that, "after working sixty days under the new lighting, former headaches due to eye fatigue were eliminated entirely." » » » Modern Cooper Hewitt lighting costs less than ever before. Why not look into the profits obtainable with an "engineered" lighting system of Cooper Hewitt Mercury lamps? Our lighting engineers will be glad to give you complete information... write to General Electric Vapor Lamp Company, 899 Adams Street, Hoboken, New Jersey.

GENERAL ELECTRIC
VAPOR LAMP COMPANY

974C



Daycos Ease the "Deadline Jitters"

GRAPHIC ARTS EXPOSITION EXHIBITOR NEW YORK SEPT. 26 TO OCT. 7 1939

Nerves are taut in the press room when it's past the deadline—but when word comes to "roll 'em" in the great Metropolitan newspaper plants the "deadline jitters" are eased as high speed presses equipped with Dayco Rollers take over the job of turning out an "on-time" edition.

Dayco "H-S" Rollers in form positions on high speed presses, teamed with Dayco "Stayput" Rollers in other positions make an unbeatable combination which delivers trouble-free mileage with no time out for changes or adjustments.

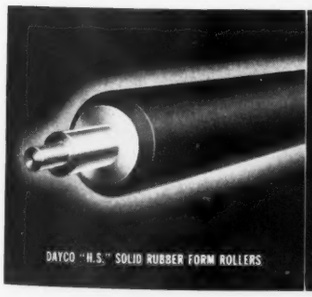
And for small types of newspaper presses Dayco "Stayput" Rollers, with the renewable surface which is an integral part of the roller construction, give top-flight performances.

In addition to unusual durability, Daycos have the right consistency and affinity for properly distributing and depositing ink. With Daycos, presses can run at top speeds under any climatic condition. They are ink and wash-resisting. There is no ink penetration—no soft spots—no blisters. They can be stored indefinitely without deteriorating.

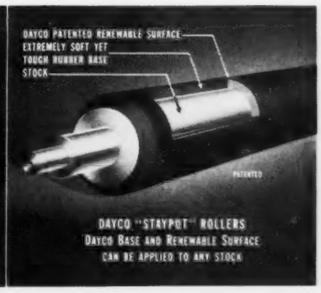
Let us give you detailed figures showing how Daycos are saving time, money and trouble for large and small newspapers.

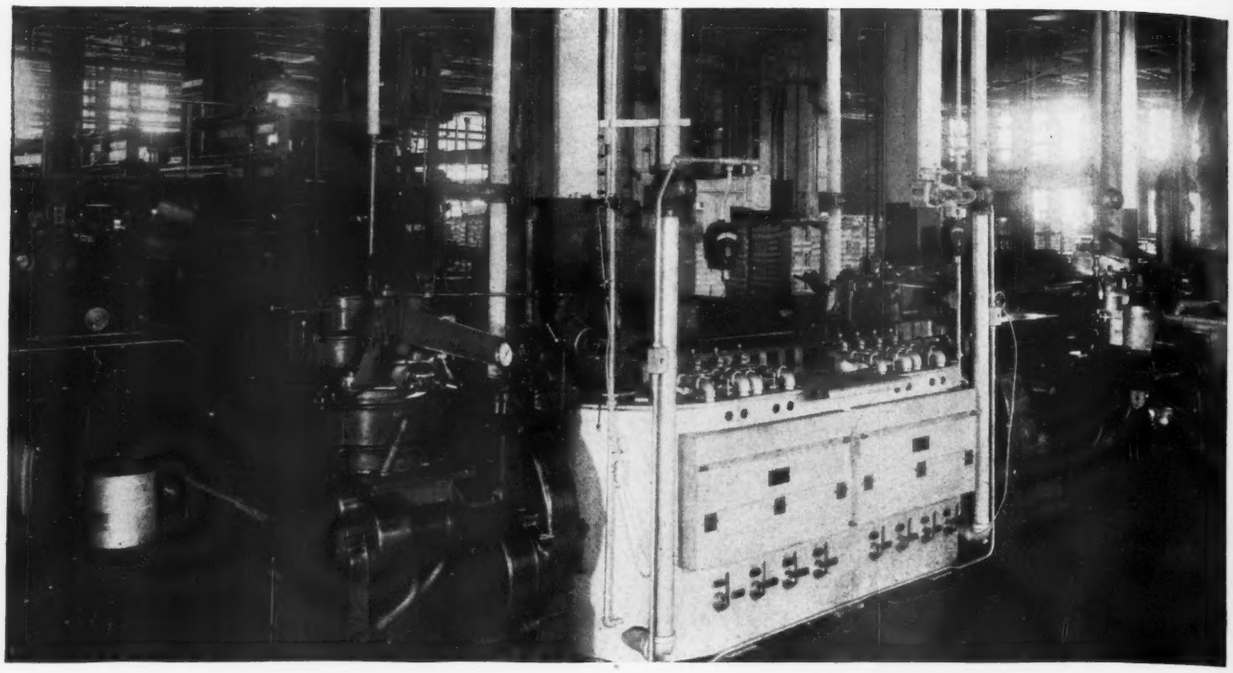
Distributed by
GEO. H. MORRILL COMPANY
Division General Printing Ink Corp.
Write to any Branch:
Boston • Detroit • Minneapolis • New York • Chicago • Fort Worth • Philadelphia • St. Louis • Seattle • Los Angeles
San Francisco

DAYCO "H. S." AND "STAYPUT" ROLLERS
Made Especially for Newspapers
★ ★ ★
THE DAYTON RUBBER MFG. CO.
DAYTON, OHIO
The Originators and Pioneers of Synthetic Rubber Printing and Lithographic Rollers



Dayco Rollers
The Original Synthetic Rubber Printing and Lithograph Rollers
AND "H.S." SOLID RUBBER ROLLERS FOR FORM POSITIONS





When The PHILADELPHIA INQUIRER *INQUIRES . . .*

The Philadelphia Inquirer has to be given all the answers. In 1935, The Inquirer asked us about Kemp Gas Immersion Melting. We told them. We drew pictures. We laid before them the famous Kemp guarantee*. So, the Philadelphia Inquirer put in the 12 ton gas-fired Immersion Melting Stereo Pot shown above to supply a battery of double automatic autoplates.

We said it would save money on gas bills, it would give faster melting, slower freezing, save dross, give more accurate temperature control.

Today, as this ad goes to press, the Philadelphia Inquirer is duplicating the original Kemp Immersion Melting equipment order. It did what we said it would do, perhaps more. And it will do in *your* plant what we say it will do. Why not ask what that will be?

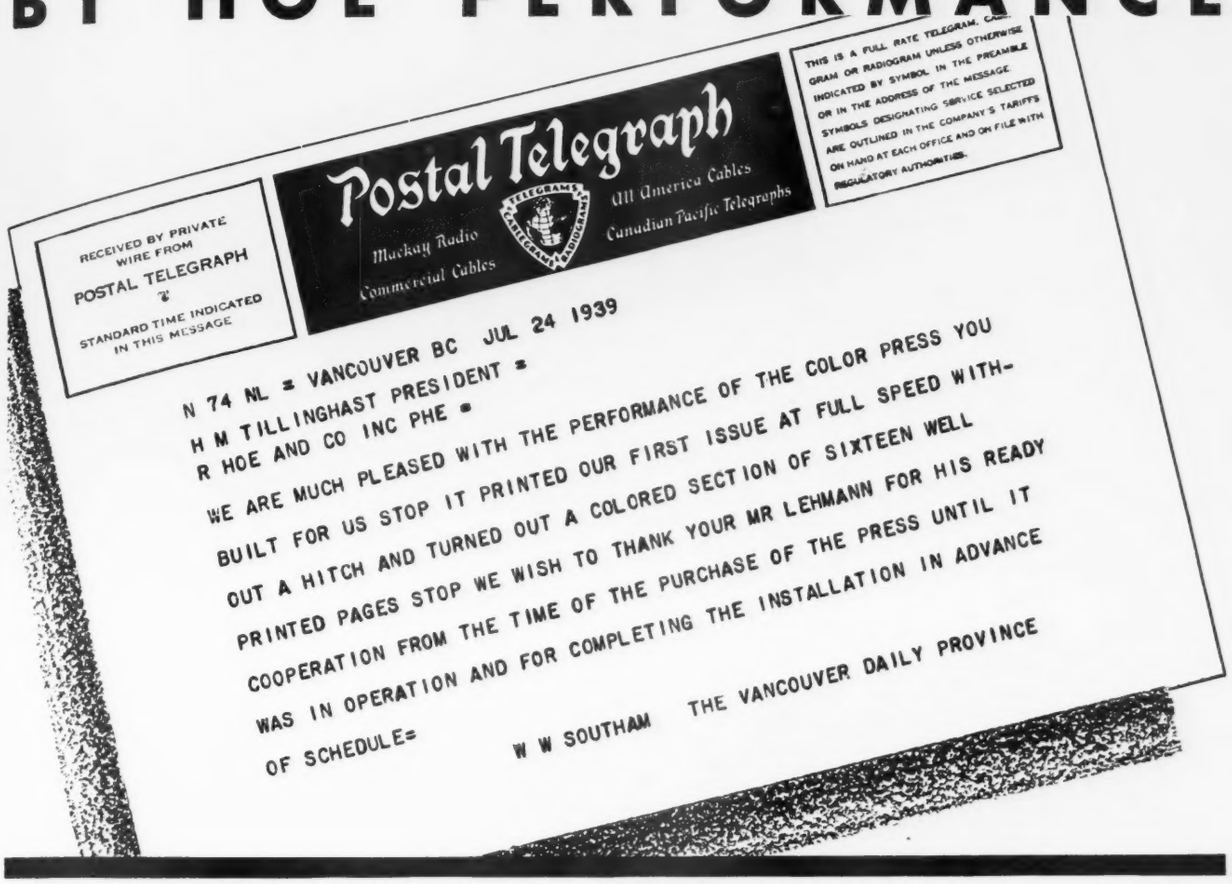
Address **The C. M. Kemp Mfg. Co., 405 E. Oliver St., Baltimore, Md.**

KEMP of BALTIMORE

* Kemp guarantees unconditionally that Kemp Immersion Melting will save 40 percent (or more) in stereotyping fuel. Kemp will install Immersion Melting in your plant, give you 30 days to judge its efficiency. If you don't like it (for *any* reason) we'll take it out and tear up the bill.

"....."Pleased"...

BY HOE PERFORMANCE


RECEIVED BY PRIVATE WIRE FROM
POSTAL TELEGRAPH
STANDARD TIME INDICATED IN THIS MESSAGE
Postal Telegraph
Mackay Radio
Commercial Cables
All America Cables
Canadian Pacific Telegraphs
THIS IS A FULL RATE TELEGRAM, CA
GRAM OR RADIOGRAM UNLESS OTHERWISE
INDICATED BY SYMBOL IN THE PREAMBLE
OR IN THE ADDRESS OF THE MESSAGE
SYMBOLS DESIGNATING SERVICE SELECTED
ARE OUTLINED IN THE COMPANY'S TARIFFS
ON HAND AT EACH OFFICE AND ON FILE WITH
REGULATORY AUTHORITIES.
N 74 NL = VANCOUVER BC JUL 24 1939
H M TILLINGHAST PRESIDENT =
R HOE AND CO INC PHE =
WE ARE MUCH PLEASED WITH THE PERFORMANCE OF THE COLOR PRESS YOU
BUILT FOR US STOP IT PRINTED OUR FIRST ISSUE AT FULL SPEED WITH-
OUT A HITCH AND TURNED OUT A COLORED SECTION OF SIXTEEN WELL
PRINTED PAGES STOP WE WISH TO THANK YOUR MR LEHMANN FOR HIS READY
COOPERATION FROM THE TIME OF THE PURCHASE OF THE PRESS UNTIL IT
WAS IN OPERATION AND FOR COMPLETING THE INSTALLATION IN ADVANCE
OF SCHEDULE=
W W SOUTHAM THE VANCOUVER DAILY PROVINCE

Pleased by Prompt Delivery. Three days ahead of the promised shipping date, the new Hoe 8-cylinder multi-color press and Hoe precision stereo equipment, recently ordered by the Vancouver Daily Province, were on their way to British Columbia . . . a tribute to the facilities of the Hoe plant.

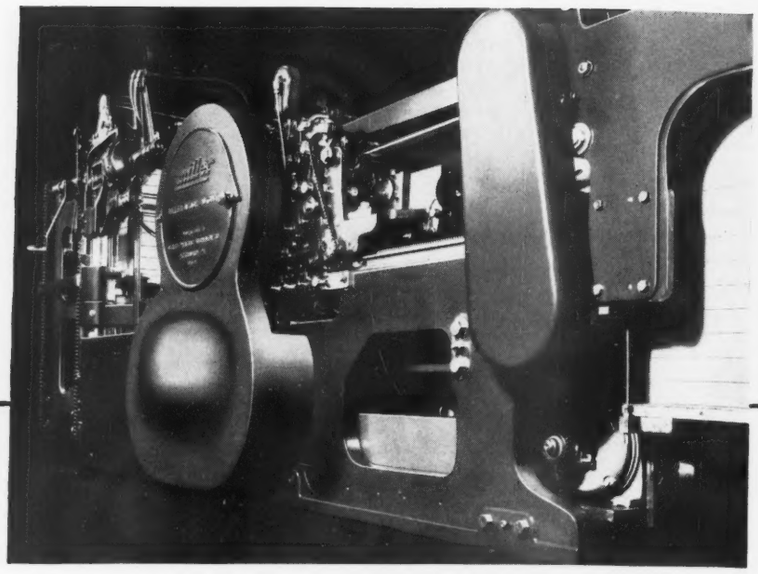
Pleased by Prompt Erection. The new press was installed, adjusted and "ready to run" five weeks after the Hoe erectors went to work . . . a tribute to the knowledge and skill of the men who service Hoe presses.

Pleased by Performance. Even the first run of the newly installed press was completed without a single web break; without mechanical adjustment of any kind . . . a tribute to the precision and care with which Hoe Presses are constructed.

R. HOE & CO., Inc.

General Offices: 910 E. 138th St. *(At East River)* New York, N. Y.

BOSTON SAN FRANCISCO CHICAGO BIRMINGHAM



Miller Automatics—distinguished in design and popularity as America's foremost cylinder presses.

LOOKING AHEAD IS TO-DAY'S PROBLEM

EVEN to-day, it is a startling reality to many that those idle, sheeted presses will profit no more. Yet, it is normal and timely that machines built to fit production standards of ten or more years ago, should be outclassed to-day. Their continued use must result in ever-deepening loss to their owners and operators.

* * *

At the 1939 Graphic Arts Exposition, printers will find encouraging support in Miller Automatics—a new bulwark in the form of machines which are more than just printing presses. These Miller Automatics are business-building machines with unique factors of quality and efficiency to meet a new era. To use them, no printer need abandon his craft nor is excessive investment necessary.

* * *

The industry is thriving. Three times as many cylinder presses were built in 1937 as in 1933. Printing and publishing increased 44% in the same years. During this time, Miller Automatics planned for profits, grew even more rapidly in numbers and efficiency, greatly outnumbering other cylinders of similar size.

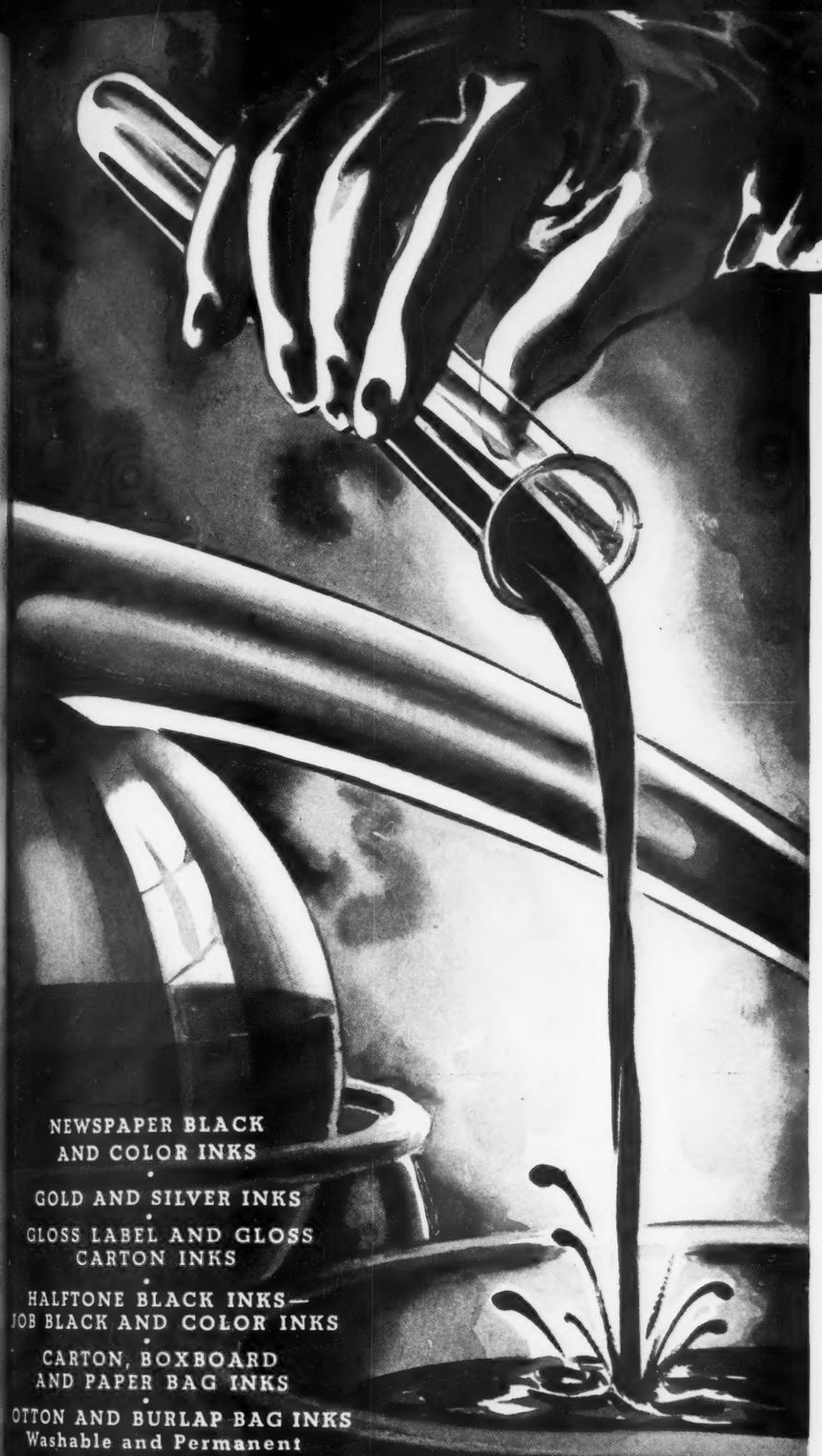
* * *

It is a promise that to-day's Miller Automatics will bring a still greater measure of value to America's pressrooms. You are cordially invited to inspect them at the Miller exhibit, Graphic Arts Exposition, New York, September 25 to October 7.

miller

MILLER PRINTING MACHINERY CO., PITTSBURGH, PA.

Should you be unable to attend the Graphic Arts Exposition, information concerning Miller equipment shown there, will gladly be given in detail at or after that time—on request. No obligation.



NEWSPAPER BLACK AND COLOR INKS

•

GOLD AND SILVER INKS

•

GLOSS LABEL AND GLOSS CARTON INKS

•

HALFTONE BLACK INKS—
JOB BLACK AND COLOR INKS

•

CARTON, BOXBOARD AND PAPER BAG INKS

•

OTTON AND BURLAP BAG INKS
Washable and Permanent

•

EAD WRAPPER, FRUIT WRAPPER AND WAX PAPER INKS

•

PROCESS COLOR INKS

•

DULLSET INKS

•

PYROXYLIN INKS

Birthplace of YOUR PROFIT

WITH today's narrow profit margins, wise printers play safe in choosing inks. They know how easily the troubles and delays caused by faulty inks may turn profit into loss. They realize that the retorts and test tubes of the skilled ink chemist are actually the birthplace of the printer's profit — and they choose their inks accordingly.

A century of ink-making knowledge and research "at the elbow of the printer" is the intangible ingredient in Morrill Inks which means profit-insurance for you. When you use Morrill Inks, it is this extra ingredient that assures finest results with matchless ease and speed and economy.

Whether your problem is inking newsprint at running speeds of 50,000 per hour—or printing burlap bags — or getting jewel-like color reproduction in a delicate brochure — there is a Morrill Ink created to do that job at lowest *real* cost.

It will pay you to call in the nearest Morrill Service Man now—and learn why more Morrill Inks are used than any other make.

•

GEO. H. MORRILL CO.

DIVISION

GENERAL PRINTING INK CORPORATION

100 SIXTH AVENUE • NEW YORK, N. Y.

FACTORIES

NORWOOD, MASS. • TACONY, PHILA., PA.
CHICAGO, ILL. • SAN FRANCISCO, CAL.

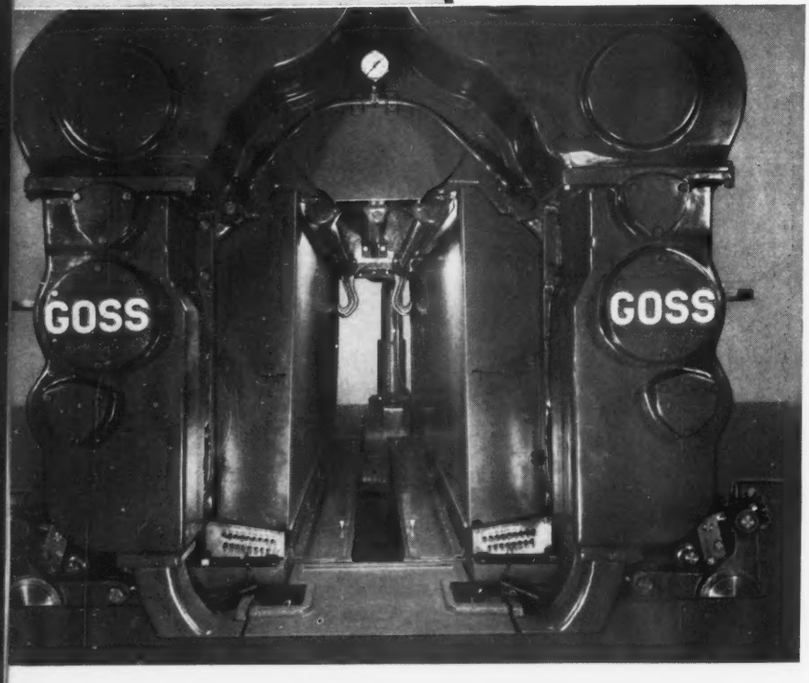
BRANCHES

BOSTON • NEW YORK • PHILADELPHIA • DETROIT
CHICAGO • ST. LOUIS • MINNEAPOLIS • FT. WORTH
LOS ANGELES • SAN FRANCISCO • SEATTLE

ANDARD OF THE NEWSPAPER & PRINTING WORLDS

GOSS IS THE CHOICE
of the SPRINGFIELD DAILY NEWS

4 HEAVY DUTY HIGH SPEED ANTI-FRICTION UNITS AND ONE HEAVY DUTY FOLDER



AFTER thorough consideration and comprehensive comparison, the publishers of the Daily News, Springfield, Mass., chose a Goss Press.

The new equipment includes four heavy duty, high speed, anti-friction units and one heavy duty folder. These units are the latest type, fully enclosed design that eliminates ink misting entirely from the pressroom and insures pressmen's safety.

In selecting a Goss Press, the News is getting the only totally enclosed, automatically lubricated, anti-friction press. It is capable of running up to 60,000 copies per hour, producing a quality printed sheet on a clean web.

In addition to these mechanical features, Goss Presses are backed by a dependable service policy that assures prompt, efficient attention to any call, any time, *anywhere*.

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Since the first Linotype cast its first slug, the development and refinement of the Linotype have gone steadily forward. Each year its field of usefulness has expanded. And every passing year sees still more of the world's printing produced from Linotype slugs.

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Today, the machines that are the worthy successors to that machine which gave the practical answer to the problem are the *Blue Streak Linotypes*.

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For all makes of Printing Presses, Folding Machines, etc.

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Removes Static Electricity—*thus increasing production*
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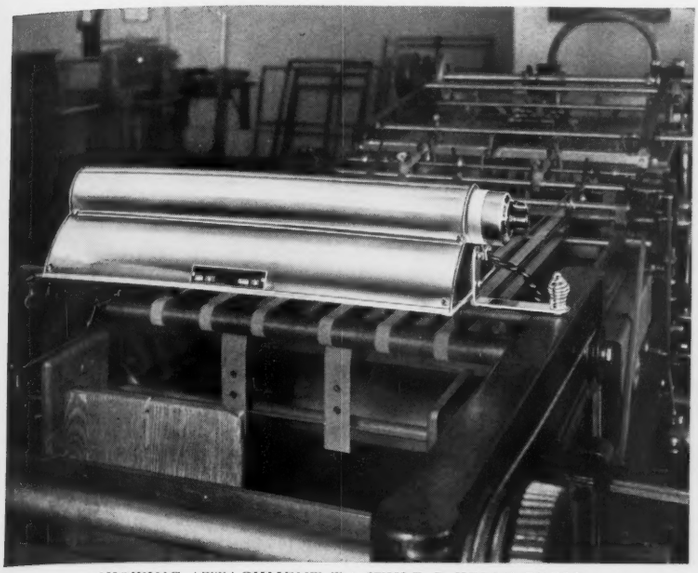

SHOWING ATTACHMENT TO STYLE B KELLY PRESS

The Doyle Electric Sheet Heater, by quickly drying the ink, makes it possible to make quicker deliveries of your printing, to say nothing of the time saved in waiting to back-up short runs, and the savings on slip-sheeting costs. The fact that you can carry more ink with this attachment means a perfect piece of printing instead of an ordinary job. By eliminating static it permits faster press speed with perfect jogging. This means more production, better printing and increased profits.

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The manufacturers of this heater, The J. E. Doyle Company of Cleveland, assure you of years of satisfactory service when ordinary care is exercised in handling. The many users of the Doyle Heater attest to its excellent performance.

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The new low price on the **Johnson Perfection Gas Burner** with automatic electric control valve complete has just been announced. Write for particulars. Almost 50% reduction on former price.

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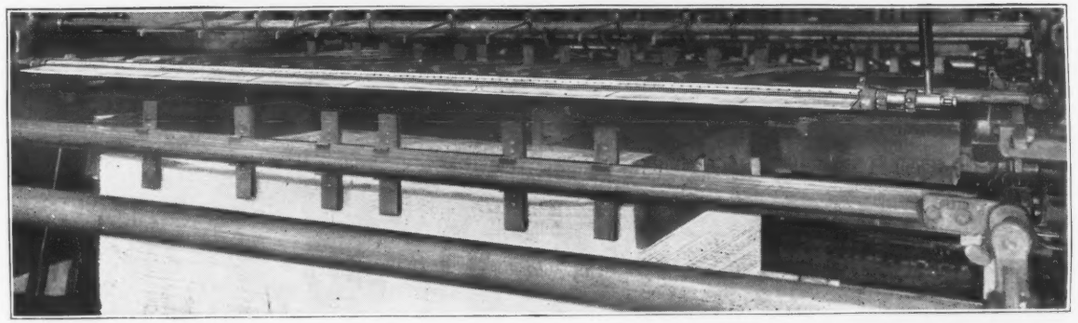

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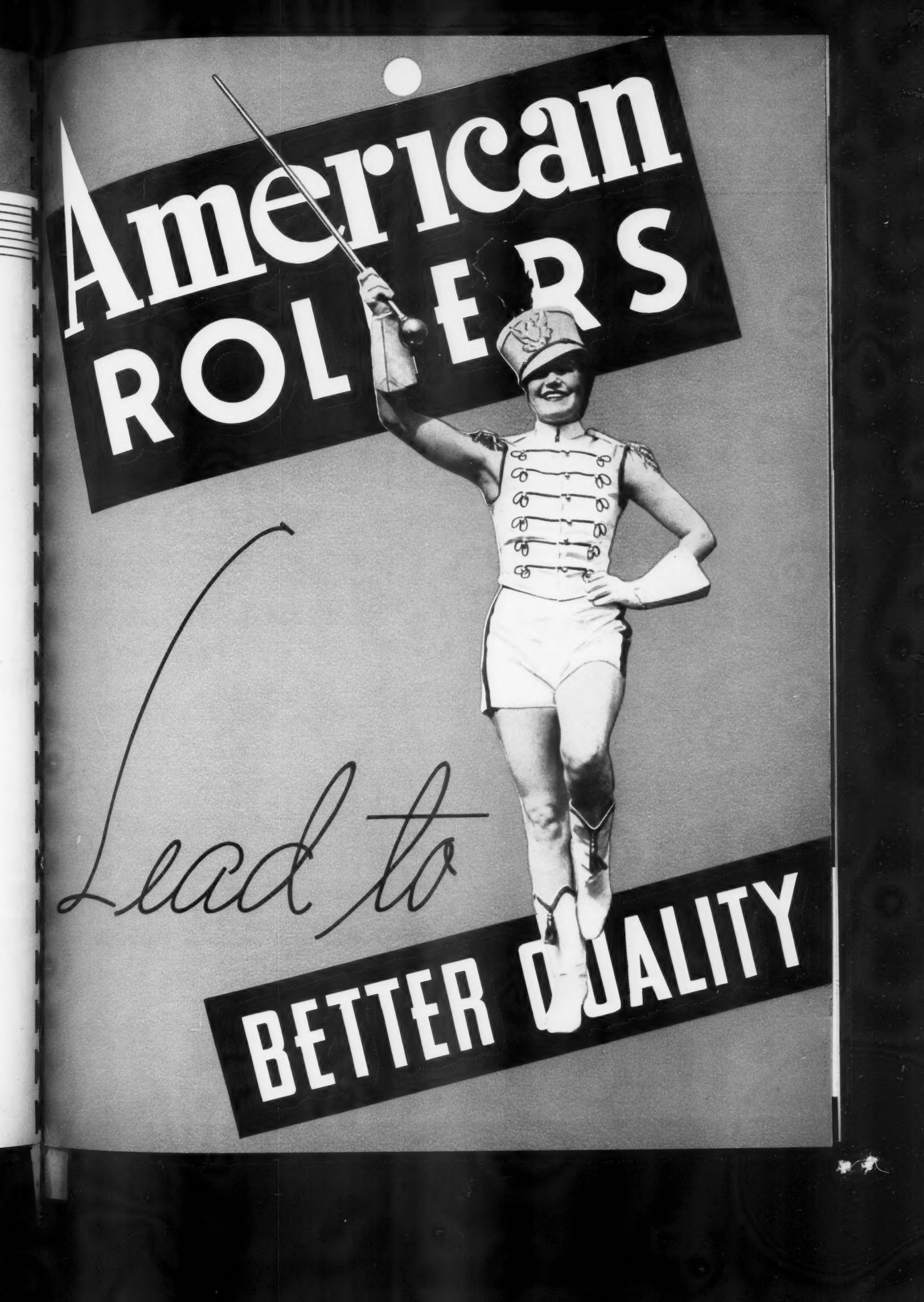
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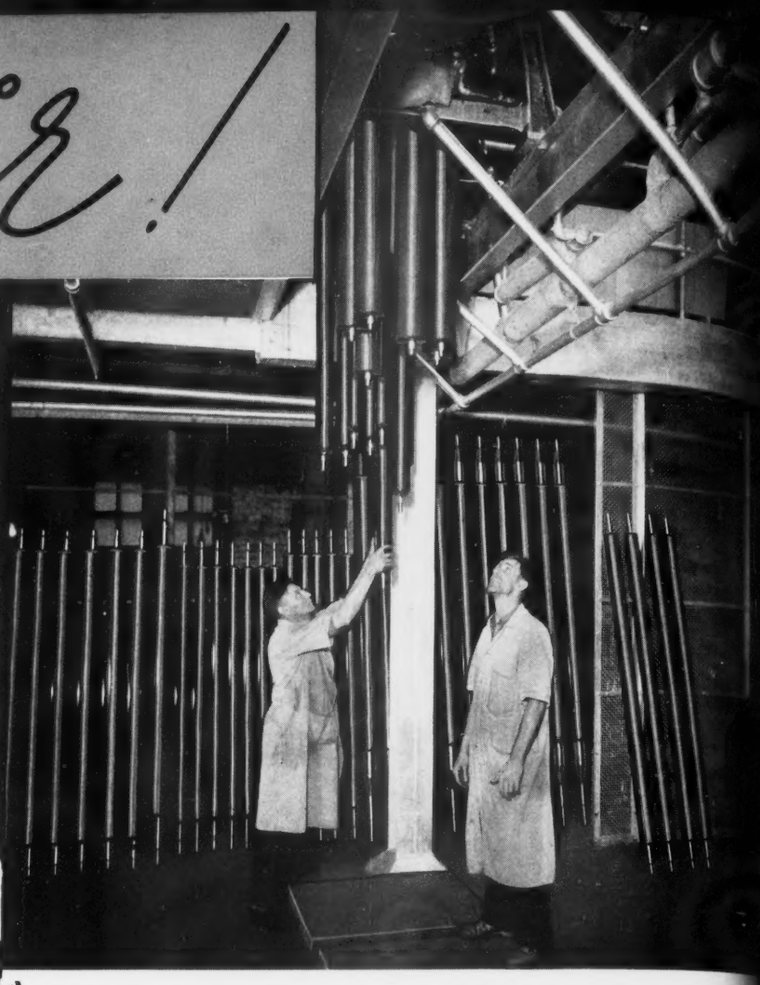

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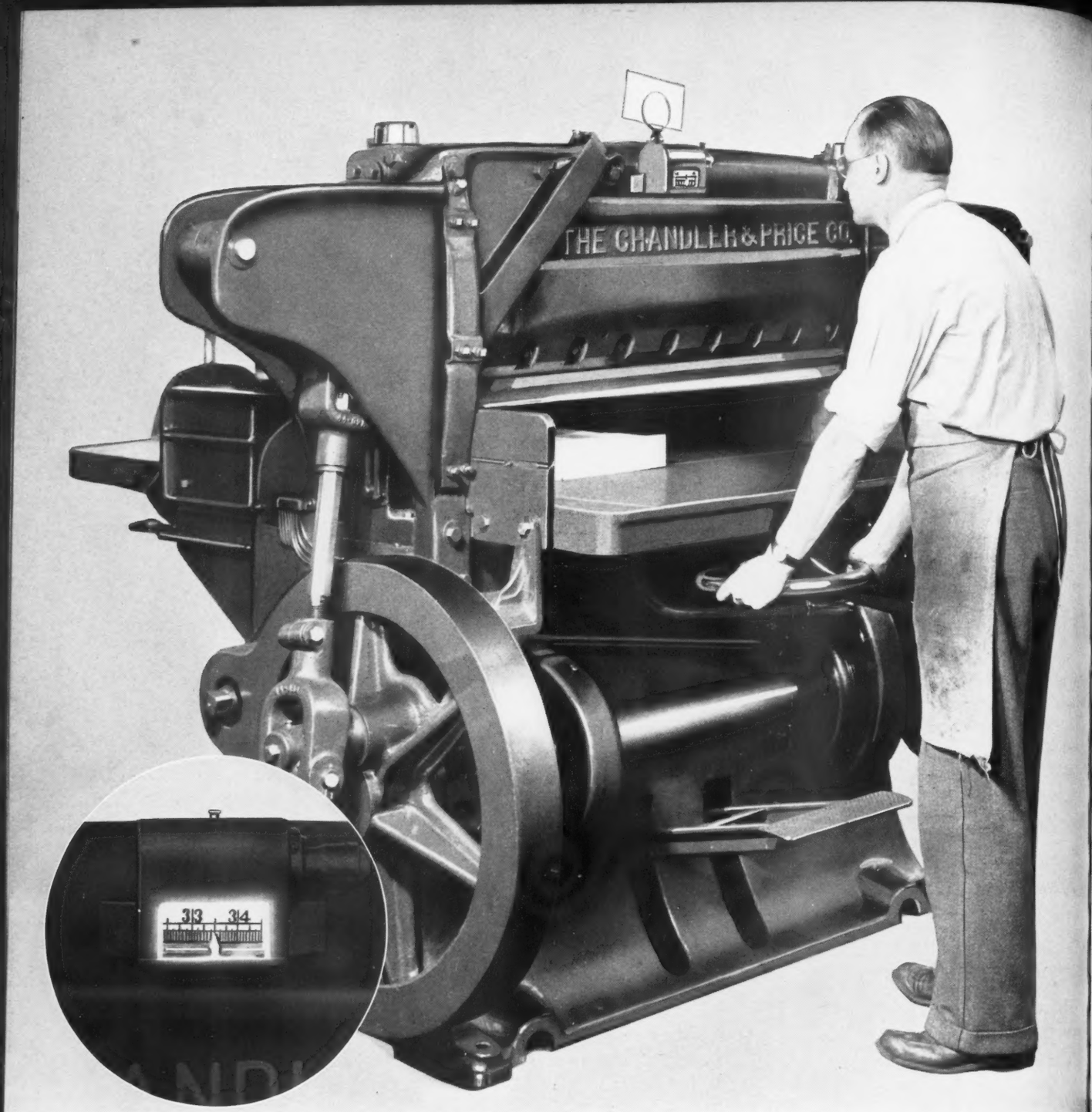
Chandler & Price



1. Accurate cutting

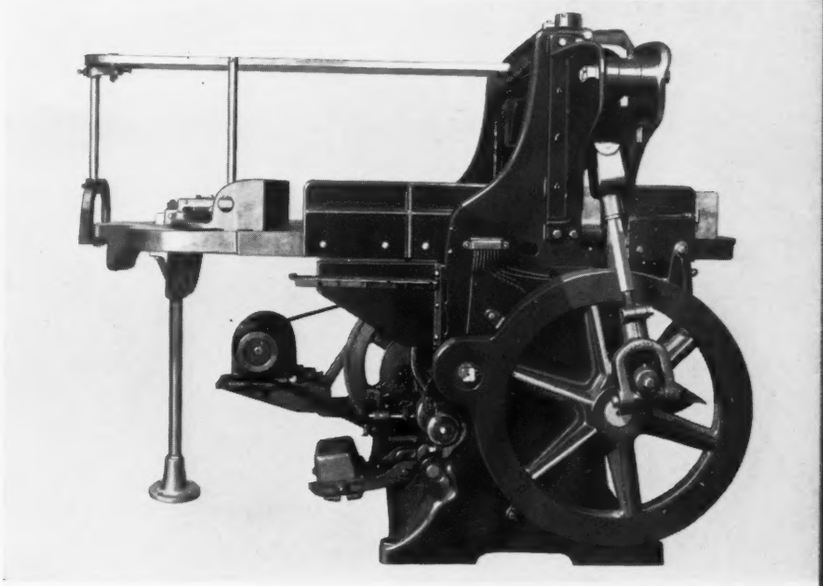
depends upon the ability of your cutter operator to see, *clearly*, the exact setting of the cutter back gauge. Frequently paper cutters are so located in plants that working light is insufficient and the fine scale markings on cutter tapes are hard to read. This illuminated tape magnifier furnished with Chandler & Price Automatic Cutters is just one example of the many important operating conveniences built into these machines.

The final outcome of any important printing job depends largely upon the accuracy with which the initial cutting and trimming is done, regardless of the care taken in presswork and bindery operations in your plant. *Accuracy* in any paper cutter is a paramount consideration. As you will readily see from the following description, accuracy to an unusual degree is an inbuilt characteristic of every Chandler & Price Automatic Paper Cutter.

2. Rigid, Unyielding Construction

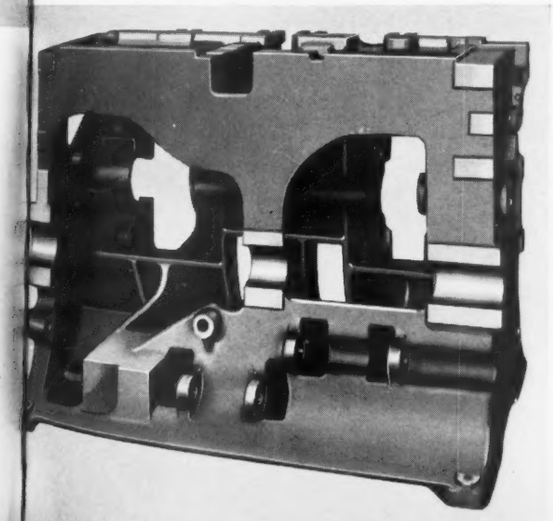
Tremendous pressure, as much as three tons, is required to pull a knife through a 4 or 5 inch "lift" of paper stock, and the cutting table must be so supported that it is absolutely free from yielding or "spring." Otherwise cutting will not be accurate.

In the Chandler & Price Automatic Cutter this table support is a substantial one-piece base casting. As shown in the illustration at the right, this base provides a rigid foundation extending from front to back under nearly half the length of the table. Heavy brackets bolted to this base provide 18 inches of further table support.



3. One-Piece Base Casting

The photograph below shows clearly this substantial foundation provided for every Chandler & Price Automatic Cutter. Besides serving as a rigid support for the cutting table, this base also carries the mainshaft, drive shaft, friction box, clutch, motor, etc. This keeps a large share of total cutter weight below the table and further promotes rigidity and accuracy.



An additional advantage of this construction is that all working parts of the cutter, including the upper framework, are bolted directly to this base. The important drive shaft and mainshaft bearing supports are an integral part of this base. Thus working parts are kept in perfect alignment throughout the life of the cutter and original cutter accuracy remains unimpaired through long use.

4. Substantial, Ribbed Cutting Table

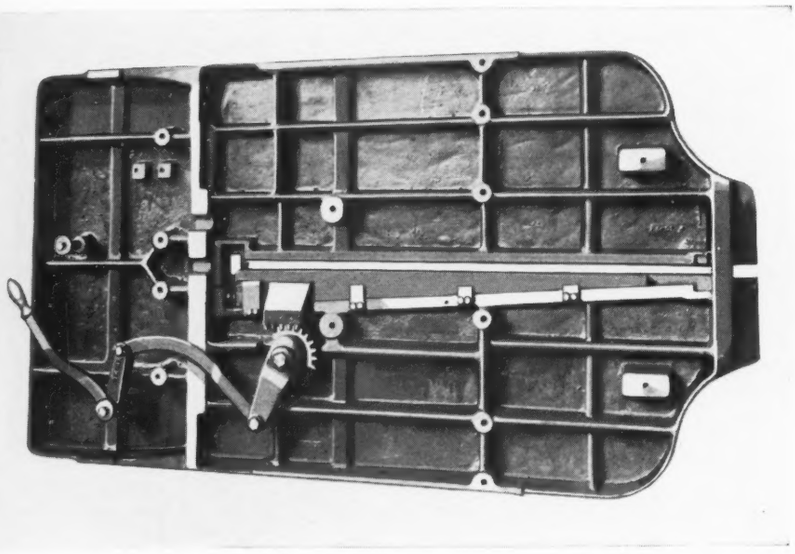
Clearly visible in the photograph below are the heavy, closely-spaced ribs which brace the underside of the cutting table. These ribs not only add substantial strength to the table but also eliminate warping and weaving. They are your assurance that the table on your Chandler & Price Cutter will remain *permanently* true the same as the day it is erected in your plant.

Long side plates are bolted to either side of this cutting table, both in front of and behind the knife. These plates are ground and squared within .003 of an inch both to the table and to the knife, so that stock jogged against these side plates will be cut accurately.

5. Quick-acting Back Gauge Lock

The photograph of the underside of the cutting table also illustrates the quick-acting back gauge lock, another feature of Chandler & Price design that contributes to cutting accuracy.

In this construction a short movement of the locking lever slides a tapering wedge or gib



lengthwise in the table slot, wedging the tongue of the back gauge tightly against the side of the slot. Thus the back gauge is locked securely at any desired position. With lock released back gauge slides entirely free.

From the illustration it is readily apparent that any wear on tapered gib or table slot will automatically be compensated for by slight additional movement of the locking lever; and that any such wear on the locking mechanism can in no way affect the squareness or rigidity of the back gauge.

6. Knife Pulled, Not Pushed, Through Stock

The heart of Chandler & Price Automatic Cutter design is the so-called Giant Pull Down; its principal features can be seen in the large photograph at the right. The cutter operating mechanism is below the table, and the knife is *pulled* through the stock in a double shear motion. This has proved to be an important advantage in eliminating knife chatter and ragged cutting.

Another advantage is that when the knife is pulled through the stock in the direction of the cut, all cutter working parts are under tension eliminating any slight back-lash in gears, etc., and the knife cuts more smoothly and evenly.

7. Cutter Cannot Repeat

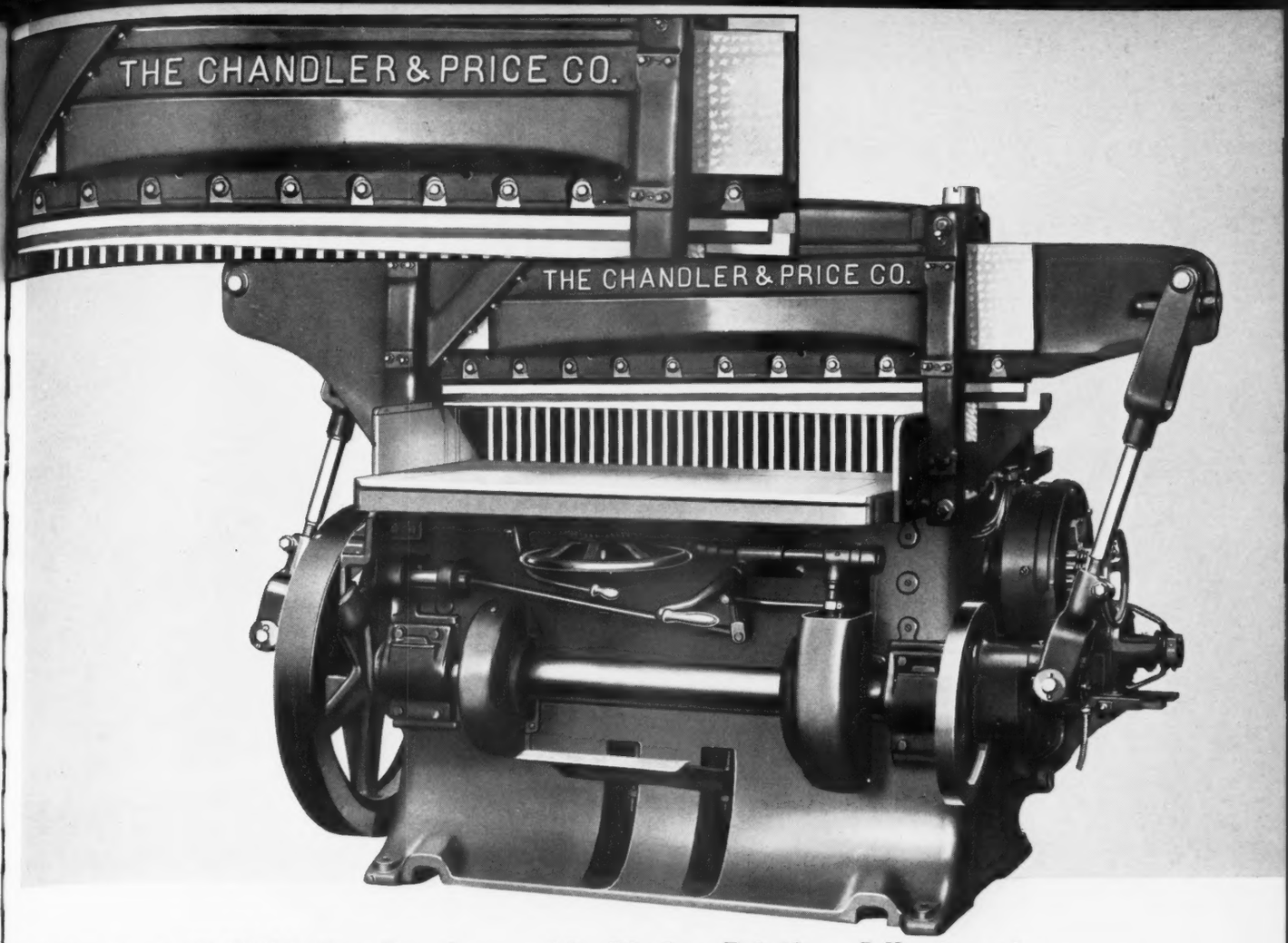
This same photograph also illustrates the safety stop, shown close to the main gear wheel under the left edge of cutting table. A heavy, sliding pin, interconnected with the starting lever, engages a projection on the main gear wheel and prevents it from turning until starting lever is intentionally released. An automatic "knock-out" releases clutch and sets the brake at end of each cutting cycle, at the same time forcing this pin into stop position. Thus the Chandler & Price Automatic Cutter absolutely cannot repeat.

Two-hand control is supplied as standard equipment. This complies with all safety requirements since it requires use of both hands beneath the table to operate the cutter.

8. Hollow Bridge-Truss Knife Bar

The enlarged sectional illustration in the photograph at upper right gives a clear idea of the knife bar construction. This design provides extra strength without extra weight. In all of our experience we have never heard of a broken Chandler & Price knife bar. Maximum strength comes at the center of bar so that the knife is held solidly against the face of the stock pile to eliminate "bowed" cutting.

The ample size of the knife bar and the large area of the bearing surface at either end insure minimum wear, parallel knife travel and clean, accurate cutting.



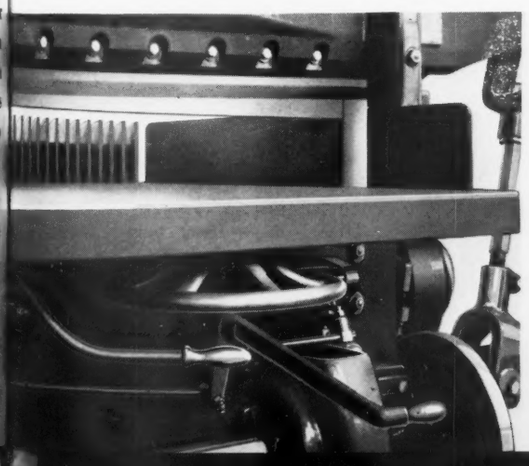
9. Cutter Controls Within Easy Reach

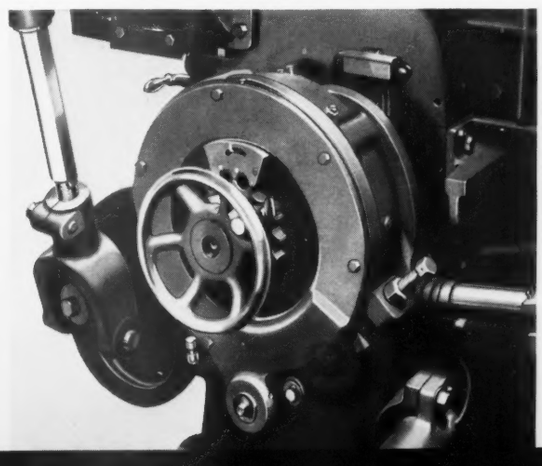
Handwheel controlling the back gauge, back gauge locking lever, and cutter starting lever are all grouped immediately in front of the operator directly below the edge of the cutting table. In this position the operator's hands fall on them naturally; he works faster because he wastes no time in fumbling or reaching. An easy two-way movement of the starting lever, a twist and a lift, releases and brings down the binder clamp; the knife follows through quickly, the entire cutting cycle takes less than two seconds, giving a maximum operating speed of 35 cuts per minute.

10. Binder Friction Adjustment Readily Accessible

The friction box controlling the binder is located out in the open, at right side of cutter. Binder pressure is varied for various weights of stock, by turning the handwheel on the face of the friction box. A gauge indicates degree of pressure being applied. (See photo below.)

The positive "free-wheeling" principle is employed, with small hardened rollers which wedge themselves into angular slots. Even after years of service operation remains noiseless, wear is inappreciable and no replacements are required.

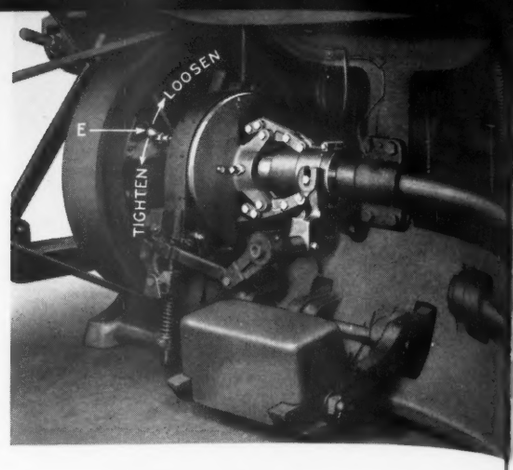


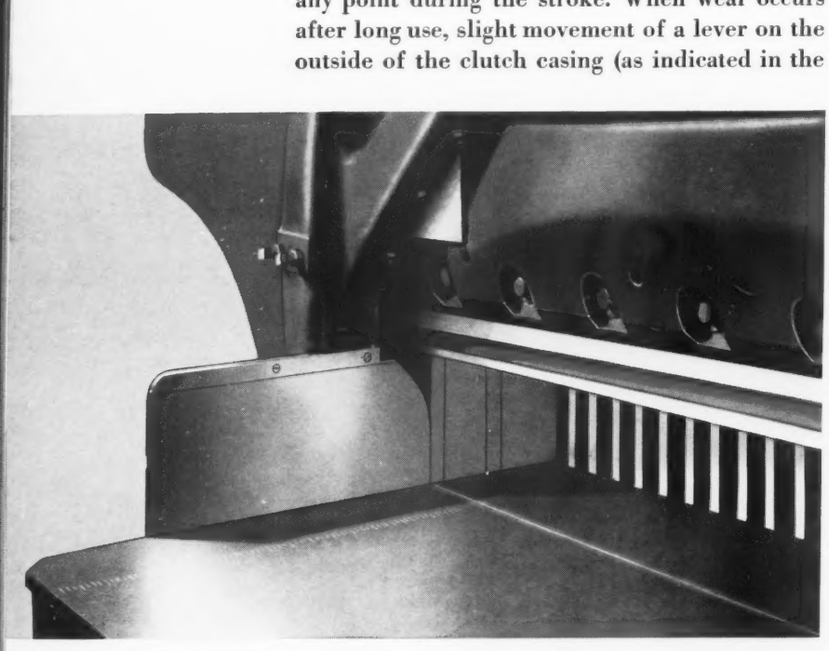


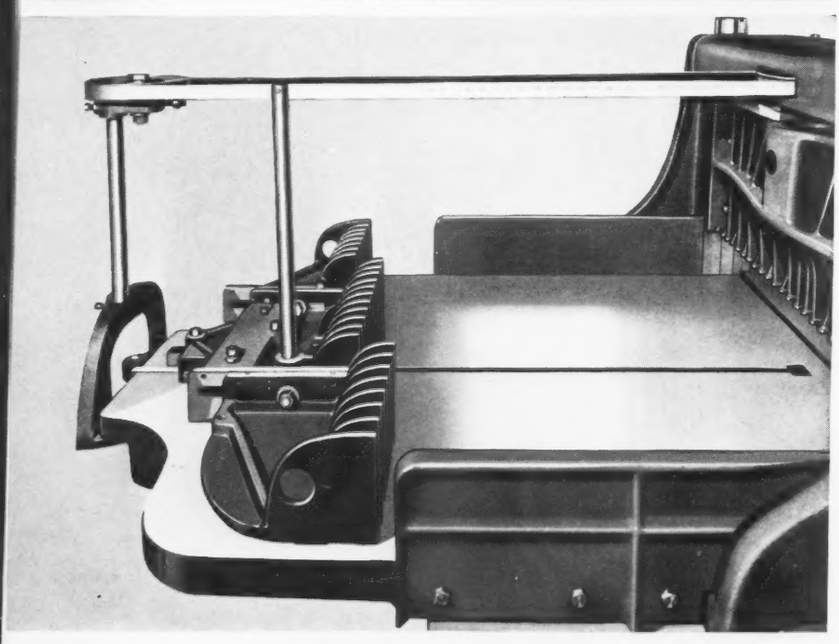
11. Multiple Disc Clutch

The clutch, shown in the photograph at right, is oversize and of the multiple-disc type, with alternate plates faced with special lining. The large friction areas take hold firmly and smoothly, release positively, and reduce wear to a minimum.

This clutch is entirely disengaged except when directly operated by the starting lever, insuring complete control and absolute safety. This clutch can never "grab." It responds immediately; the operator can stop or start the knife instantly at any point during the stroke. When wear occurs after long use, slight movement of a lever on the outside of the clutch casing (as indicated in the photograph) restores the action of the clutch to its original efficiency.







12. Sliding Panel Keeps Trimmings Out of Knife Slot

The sliding panel at the left of the cutting table, shown in the photograph at the left, is another feature you will find only on Chandler & Price Automatic Cutters. It covers the knife bar slot in the left side frame. It opens and closes automatically as the knife descends and ascends, thus keeping trimmings from packing in the knife slot. Your operator will appreciate this time-saving feature when cutting narrow strips or small pieces of stock, or when he has a lot of trimming to do.

13. Three-Part Back Gauge

The back gauge is split into three sections for convenience in trimming large quantities of books, pamphlets, letterheads, etc., to three dimensions at a single stroke of the knife. Diagonal braces and extension ribs keep the gauge permanently parallel with the knife; once adjusted, the adjustment holds rigidly, even though heavy stock is jogged against the gauge.

The back gauge moves freely and easily because it rides on ball bearing rollers, practically without friction or drag. A quick spin of the handwheel is sufficient to send it from end to end of its limit of travel; because of this free movement it can be set quickly and accurately to the finest measurements on the scale.

14. Convenient Knife Adjustment

The photograph immediately at the right illustrates the convenient knife adjustment. With a single wrench either drawbar can be easily turned to raise or lower either end of the knife. To make this adjustment the knife screws need

not be disturbed; ordinarily they are loosened only when it is necessary to replace the knife.

15. Adequate Lubrication

The same photograph (below) also illustrates one of the clusters of oil tubes which are brought out at either side of the machine to receive and carry oil to bearings in all parts of the cutter. These oil tubes enable the operator to keep working parts properly lubricated without stooping or getting under the cutter, and insure regular lubrication for important bearings that would be otherwise hard to reach. Knife bar gibs and knife bar end bearings are continuously lubricated; oil leads from the top of the cutter carry oil to felt-packed reservoirs in the gibs which automatically provide lubrication for the knife bar at each stroke of the knife.

Chandler & Price Automatic Cutters can be furnished with Bowen "One-shot" centralized oiling, at slight extra cost, if desired.

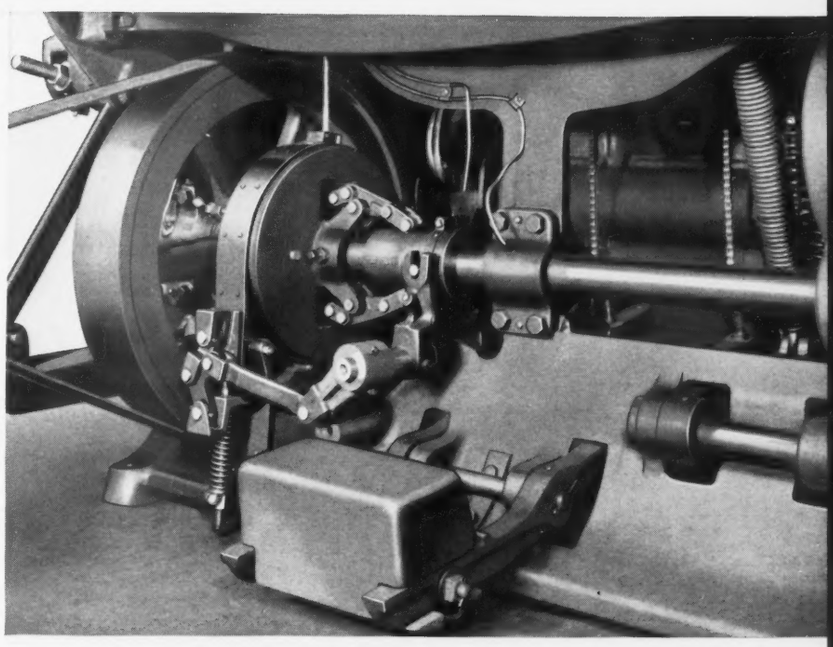
16. Self-Adjusting Brake

The large photograph at the right illustrates the substantial brake which operates on a drum on the cutter drive shaft. It is of automotive type and faced with specially prepared lining. It works positively without "grabbing" and takes up wear automatically.

The cutter flywheel is also clearly illustrated in this photograph. This flywheel revolves on the drive shaft on large roller bearings. When clutch is disengaged only this flywheel turns, drive shaft and other working parts remaining stationary. This saves needless vibration and wear.

17. Motor Mounted Below Cutting Table

The motor bracket is located at the rear of the machine under the table, out of the way where



it belongs. The motor is easy to get at, and this mounting eliminates any chance of oil dripping on stock. (See photograph below).

Another advantage is that no belt guard is required, and keeping the motor down low helps to eliminate vibration. Slotted mounting rails adapt the bracket to fit any make or style of motor and permit easy adjustment and alignment of belt.

18. A Size to Fit Your Needs

Chandler & Price Automatic Cutters are available in three sizes, 39″, 44″ and 50″, as illustrated on the following page. On receipt of your request we shall be glad to furnish complete specifications on the size to fit your needs.

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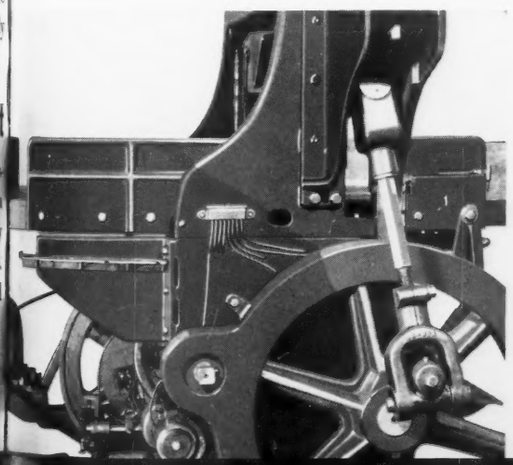
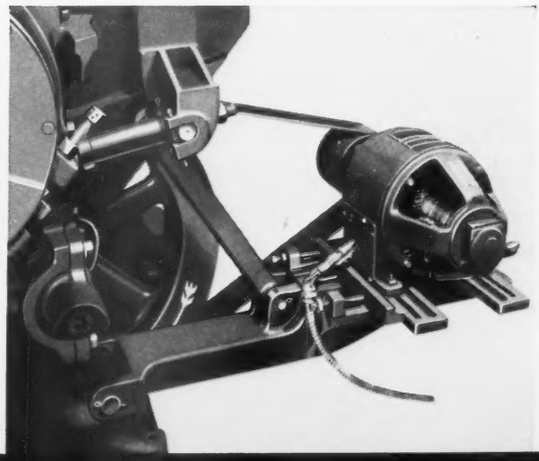
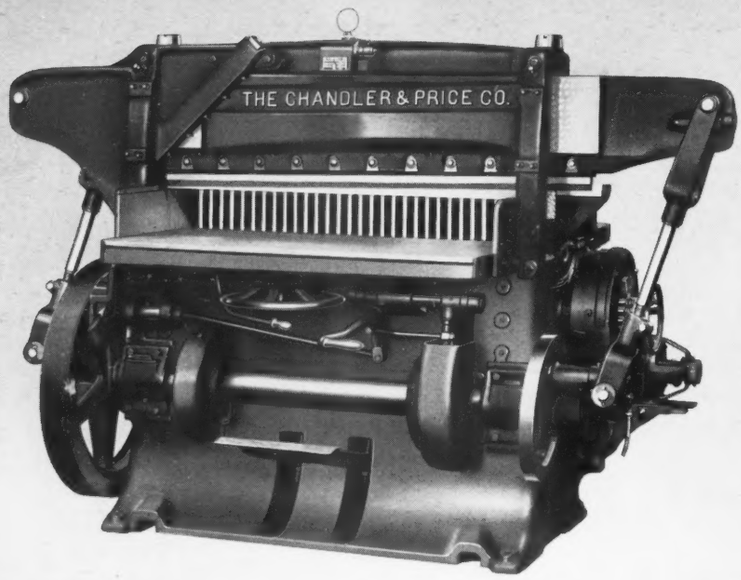
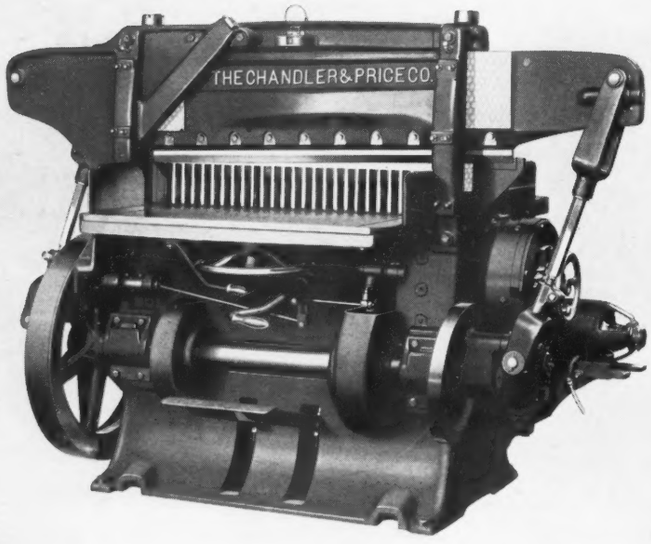
THE CHANDLER & PRICE COMPANY
CLEVELAND, OHIO



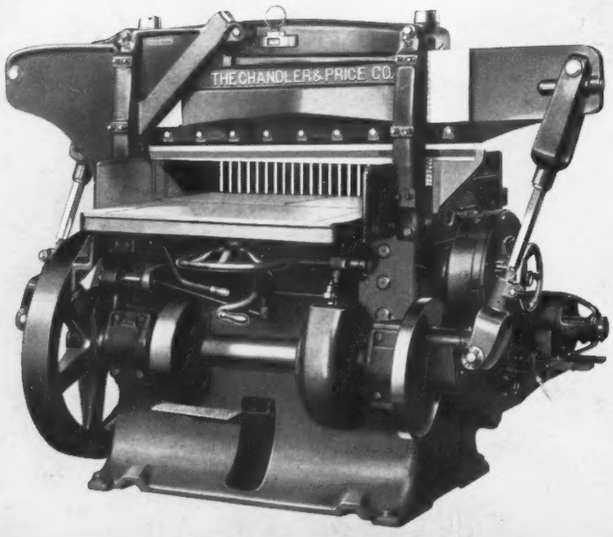




C&P 50 INCH AUTOMATIC CUTTER



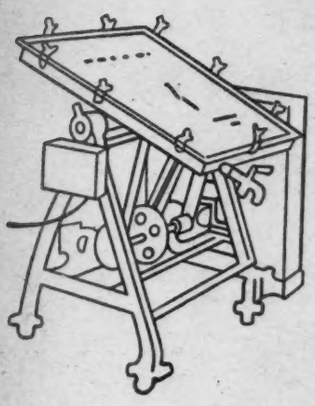
C&P 44 INCH AUTOMATIC CUTTER



C&P 39 INCH AUTOMATIC CUTTER

Printed on the
Chandler and Price 12 x 18 Craftsman
Automatic Unit and
14½ x 22 Craftsman Automatic Unit

How much of a Bogie Man is DIRT?



Recently a nationally recognized authority on Linotype and Intertype machines expressed the opinion that DIRT is directly or indirectly responsible for as much as 90% of all machine troubles.

Since the Line-Casting Machine was invented, every Composing Room has unsuccessfully battled the dirt which collects on the matrices, in the magazines, in the area of their travel, on sensitive escapements and keyboard cams—thus striking at the very foundation of machine production.

Get the utmost capacity out of your machines

What has been the defense against this dirt? Inadequate and infrequent cleaning because of the lack of a harmless and rapid method . . . until KLEAN-O-MAT supplied the remedy. What has this dirt cost you in decreased production? The relief is so simple and so practical that there is no logical reason for the continuance of dirt loss.

Clean up with Klean-o-Mat

The KLEAN-O-MAT PROCESS . . . quick, efficient, safe machine-method of cleaning . . . offers you the solution. It will show you how to realize extra value in machine production by removing obstacles to machine operation.

KLEAN-O-MAT does this by maintaining matrices, magazines, escapements, keyboard cams and channel entrances in perfect operating condition. This is accomplished simply and quickly by cleaning these vital machine parts thoroughly, thus maintaining a high standard of efficiency and giving your operators full confidence in the performance of their machines.

A new High in Maintenance Standards

What are specific results of Klean-o-Mat line-casting machine maintenance?

Run your eye over these ten assured major improvements.

- Cleaning problems simplified; cleaning time and costs reduced; machinist released for more time to spend on his machines
- Errors greatly reduced through preventing them at the source
- "Railroading" in emergencies, with reasonable assurance that composition is clean
- Smoother assembly of matrices because clean matrices stack up better
- Greater operator efficiency as the result of improved mechanical condition of the machine
- Increased production
- Fewer distributor stops because dirt causes are removed
- Better alignment; metal-tight justification lock-up, because sides of matrices are clean
- Better face because die is clean
- Fewer matrices lost on floor because matrices kept bright are easy to see; fewer matrices damaged in machine; fewer matrices discarded because of "hair-lines"

Consider their possibilities for improving production and reducing costs in your own plant.

Let us Show You How

Can any composing room executive now afford to remain indifferent to the evil of dirt . . . to the tribute he is paying to dirt? We feel that he wouldn't if he could witness for himself, under his own particular operating conditions, just what dirt is costing him every day.

KLEAN-O-MAT stands ready to show what it can do under specific conditions. Sale is contingent only on satisfactory demonstration in your own composing room. Write us for further information. Tell us the number and types of machines and magazines that you operate.

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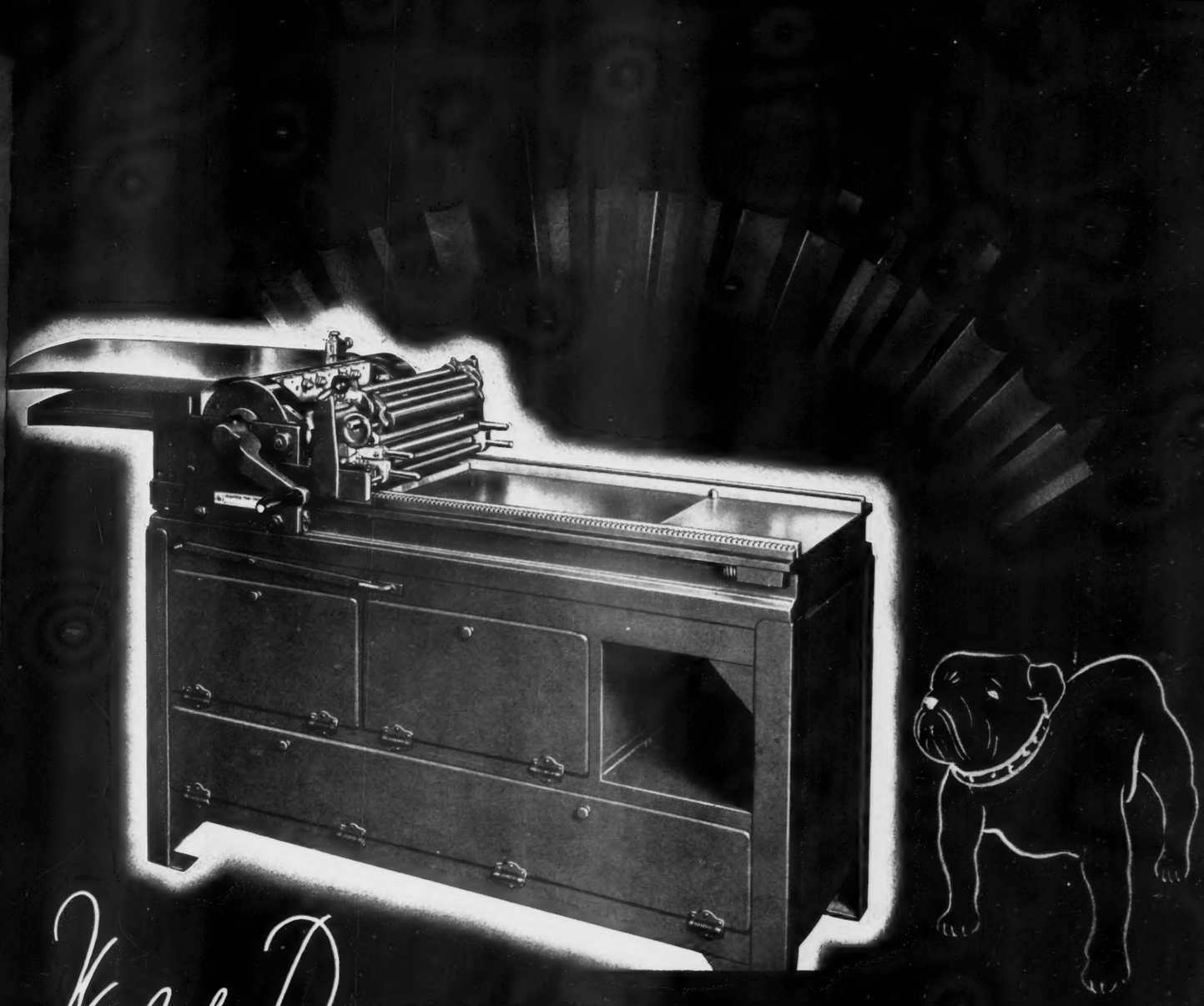

Watch Dog IN THE COMPOSING ROOM

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No. 317 Vandercook Hand Operated Proof Press solves the problem of customer demand for an unusual number of proofs.

It prints proofs of finest quality at high speed. It is ideal for printing calendars, sales presentations, posters, and other jobs where slug or form changes are frequent or the length of run does not justify production press makeready. No. 317 Vandercook Hand Operated Proof Press makes short runs profitable.

Inking is thorough and easily regulated for proper inking on longer runs. Fountain can be set the same as for a cylinder press.

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Remelting SUGGESTIONS

FOR THE TYPE METAL USER

DO NOT-

Overheat your metal.

Allow zinc, brass or copper in molten metal.

Attempt toning without an analysis.

Agitate metal unnecessarily.

Melt less than capacity of pot.

DO-

Skim at proper temperature.

Use thermometer frequently.

Use flux before skimming.

Add new or "Plus" metal regularly to maintain both quality and quantity of supply.

Have metal analyzed periodically by us without charge.

Save dross and ship in an Imperial dross drum.

RECOMMENDED TEMPERATURES FOR SKIMMING AND POURING TYPE METALS

Line Slug Metal	600-650 deg. F.
Stereotype Metal	650-675 deg. F.
Regular Monotype Metal	675-725 deg. F.
Special Monotype Metal	750-775 deg. F.

Sales Agents for "Streamline" Metal Feeders and all Types of Remelting Furnaces

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OVER

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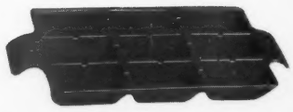
REMELTING NECESSITIES

Dry Powder Type
and Wax Type Fluxes

Fluxes To Meet Your Needs



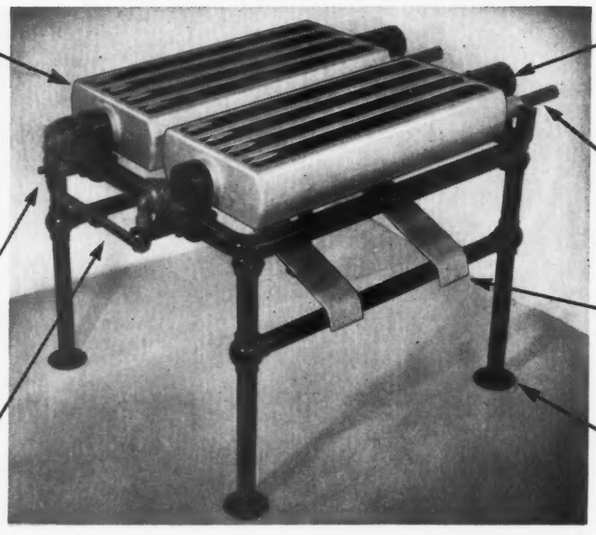
Pan Type Mold Produces
Small Convenient Blocks

The MODERN MOLD

New Slotted Eye
Patented Feature
Eliminates Removal
of Pig from Hook
No Burnt Fingers

Patented Bronze
Water Tight
Swing Joint

Solid Brass Pipe
No Rubber Hose



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From Metal

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To Dump Pigs

Adjustable Flange
Foot for Leveling

Patented

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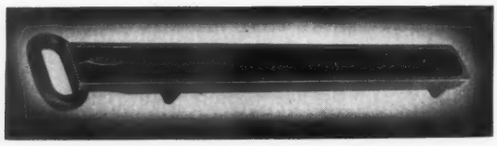

Air Cooled Molds Slotted Eye Type

Imperial

IMPERIAL TYPE METAL CO.

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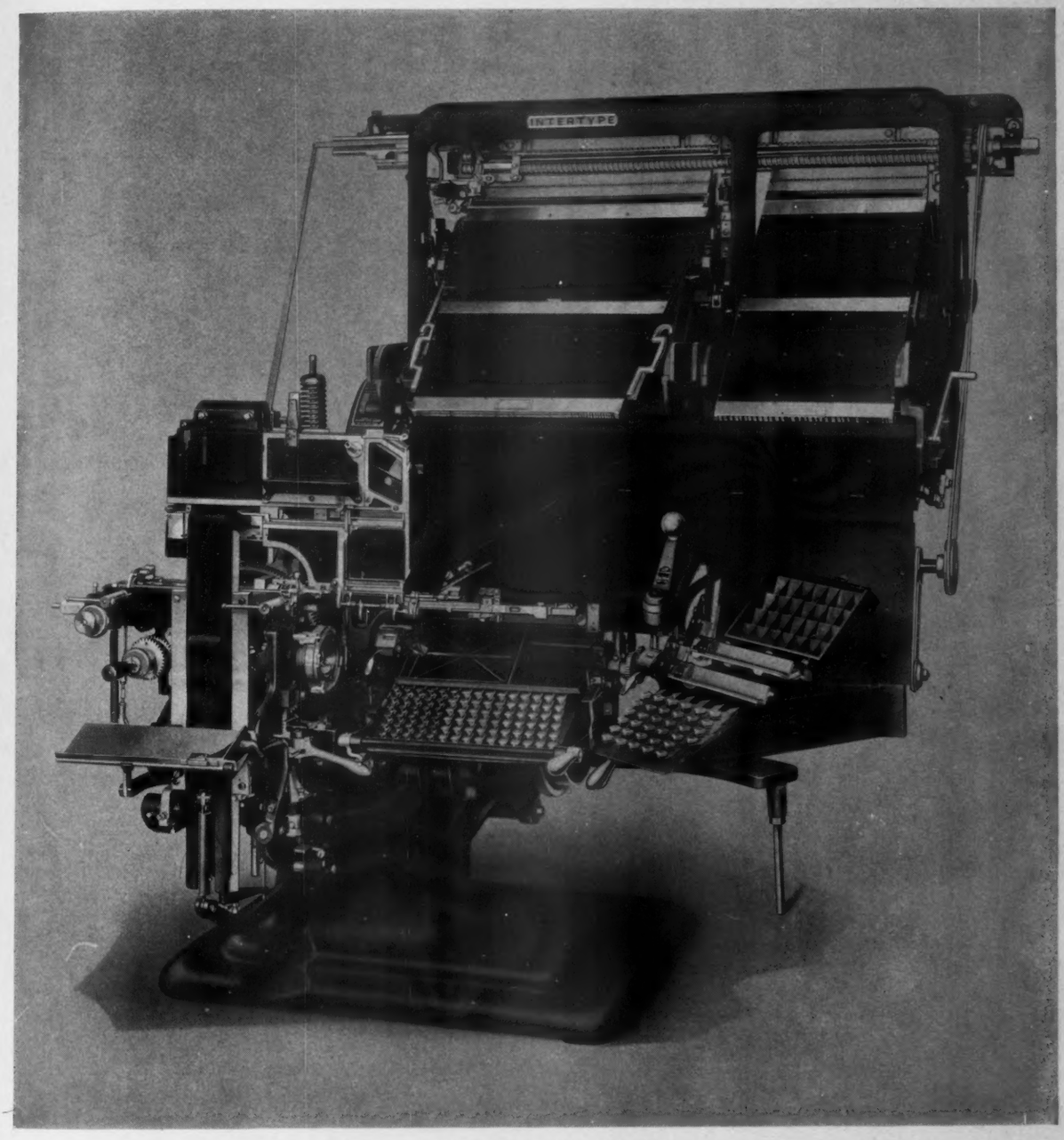
Hand Ladles

OVER

INTERTYPE Steps Ahead With Better Slugs



Be sure to see the latest INTERTYPE STREAMLINER at the Graphic Arts Exposition

A brief description of the new Intertype

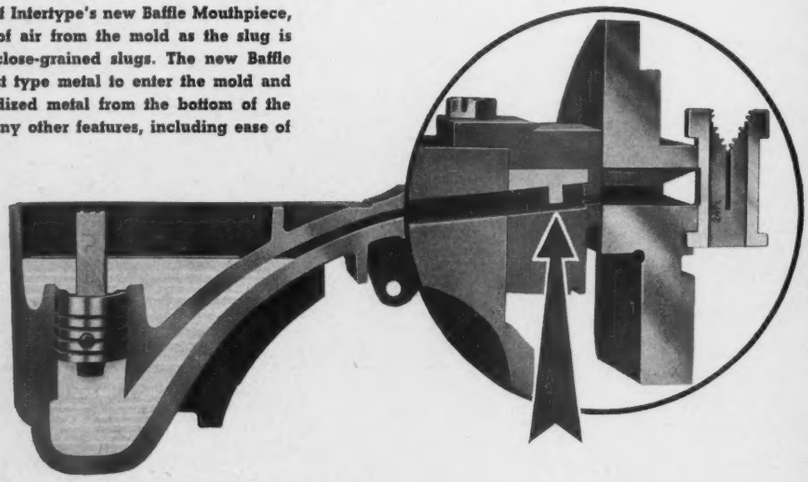
Baffle Mouthpiece, Bulb-Type Thermostat and Duplex Mold Cooling Blower

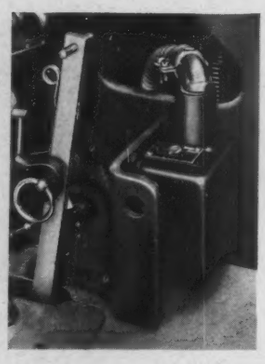
OVER →

INTERTYPE steps ahead with BETTER SLUGS

AS A RESULT of painstaking research and extensive experimentation, Intertype now offers three important developments for the casting mechanism. These three features are illustrated and described briefly on this page. More detailed information about them will be furnished on request. Please address Intertype Corporation, 360 Furman Street, Brooklyn, N. Y., or nearest branch.

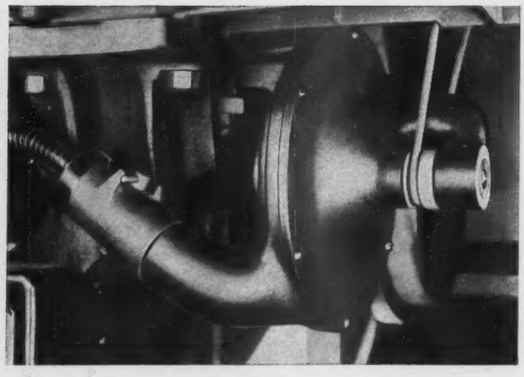
Below, at the right, sectional view of Intertype's new Baffle Mouthpiece, which facilitates the displacement of air from the mold as the slug is being cast, thus producing solid, close-grained slugs. The new Baffle (see arrow) also insures that the first type metal to enter the mold and form the type face is clean, unoxidized metal from the bottom of the throat. This new mouthpiece has many other features, including ease of removal and adjustment.





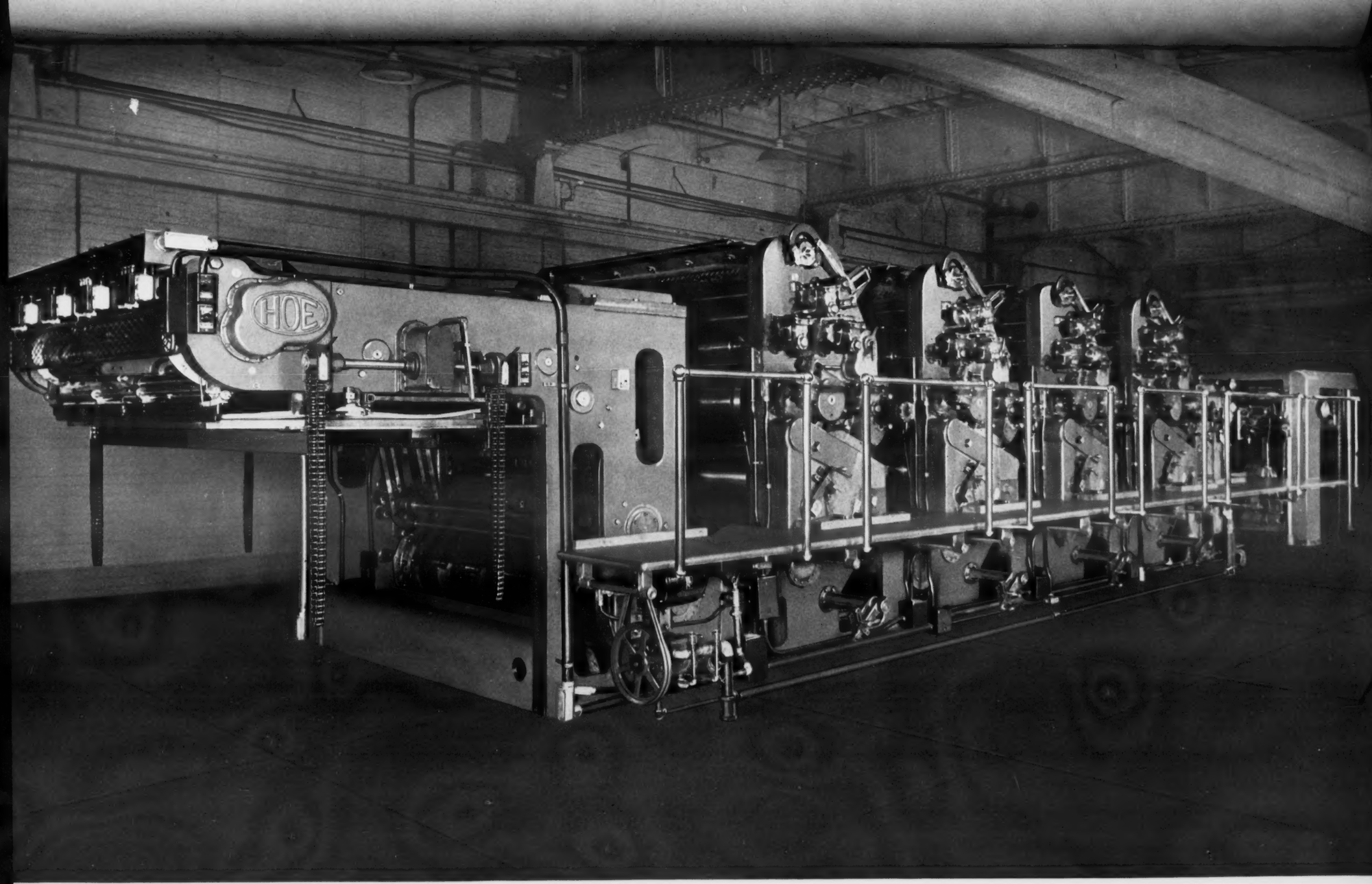
Intertype's Bulb-type Thermostat (above, at the left) offers an improved and exceedingly accurate method of controlling type metal temperatures. It responds instantly to fluctuations in heat, thus promoting uniformity of slug quality. It is positive in operation, easy to adjust, and eliminates many parts in the panel control box.

Shown at the right is Intertype's Duplex Mold Cooling Device, by means of which the Intertype mold in operating position is continuously and effectively cooled. The principal feature of this device is a double blower tube system, which directs air in two directions across the face of the mold.



Keep in touch with latest INTERTYPE developments

SET IN BETON FAMILY



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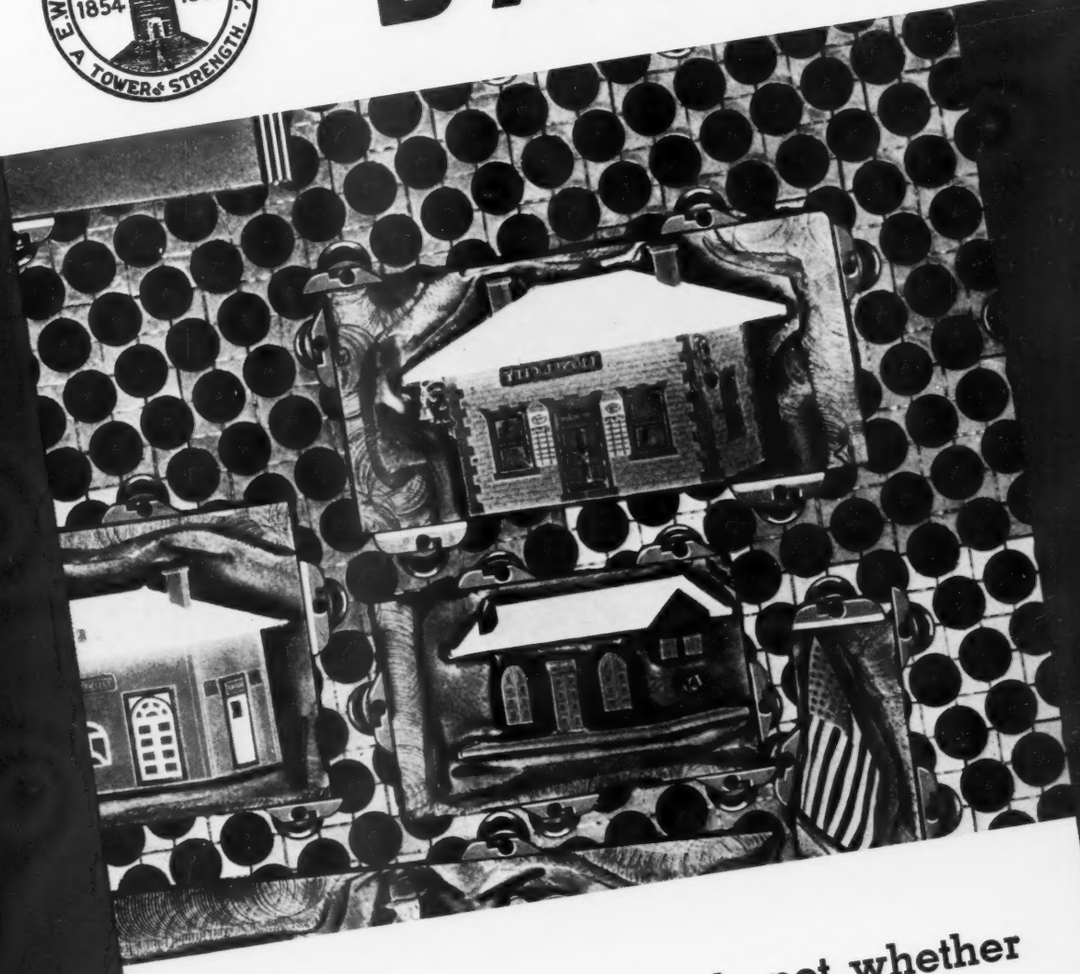
Blatchford BASE

E.W. BLATCHFORD COMPANY · REPUTATION · ESTB 1854 · INCO. 1890 · A TOWER of STRENGTH



Today's question is not whether you <u>need</u> Blatchford Base; it's whether you can afford to restrict your productive capacity by operating without it. Write for a copy of this new, informative booklet. It shows you how to stop wasteful practices which are curtailing your volume and consuming profit.

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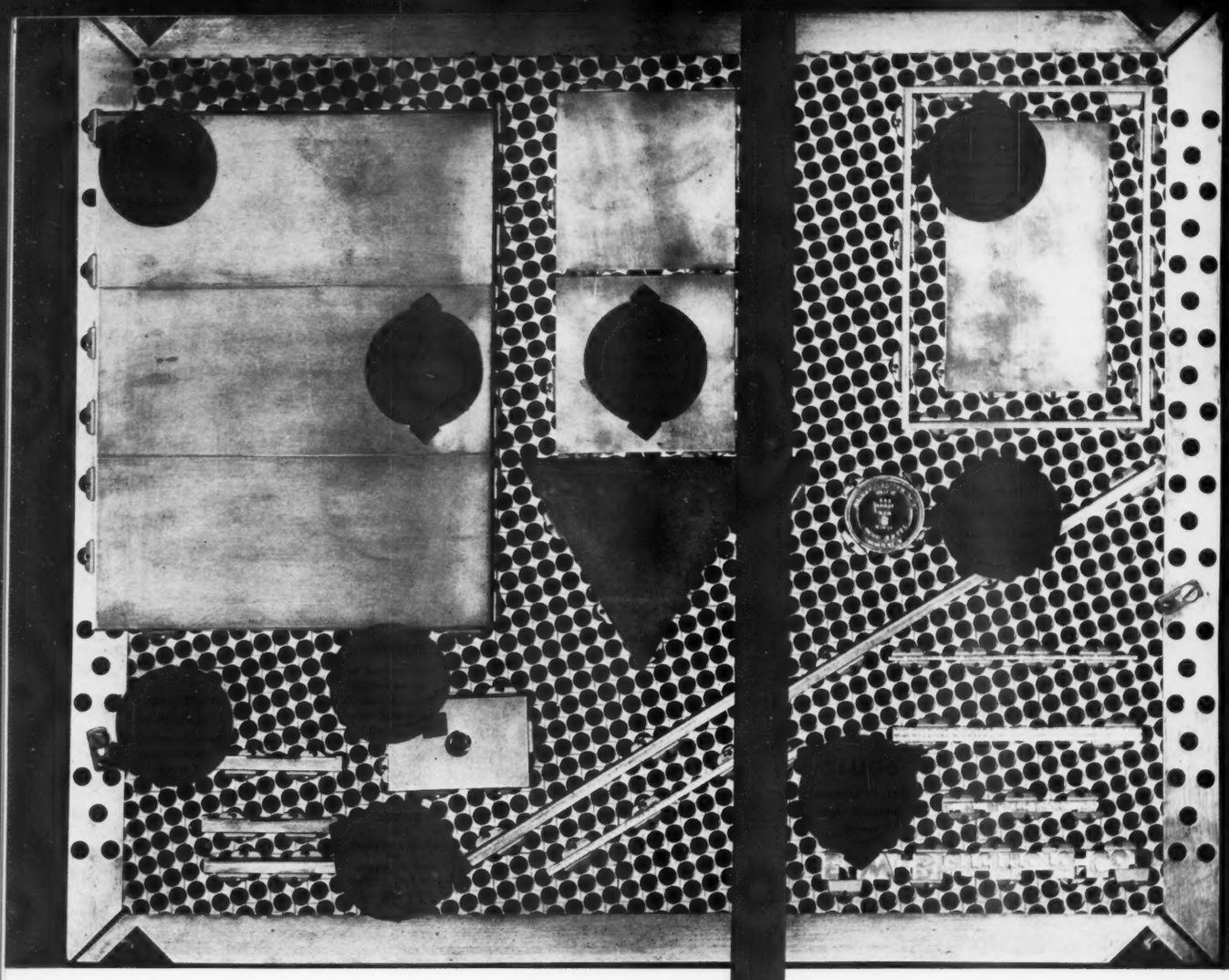

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Because it is "Experience Tested" . . . because it possesses many shop-born, exclusive features . . . and because it actually is handling, today, all classes of printing with a saving of Time that would not be possible without it . . . Blatchford Base no longer is a "supplementary" equipment item; it is absolutely necessary in meeting present day competition. If you are not Blatchford equipped . . . Investigate!

Blatchford BASE

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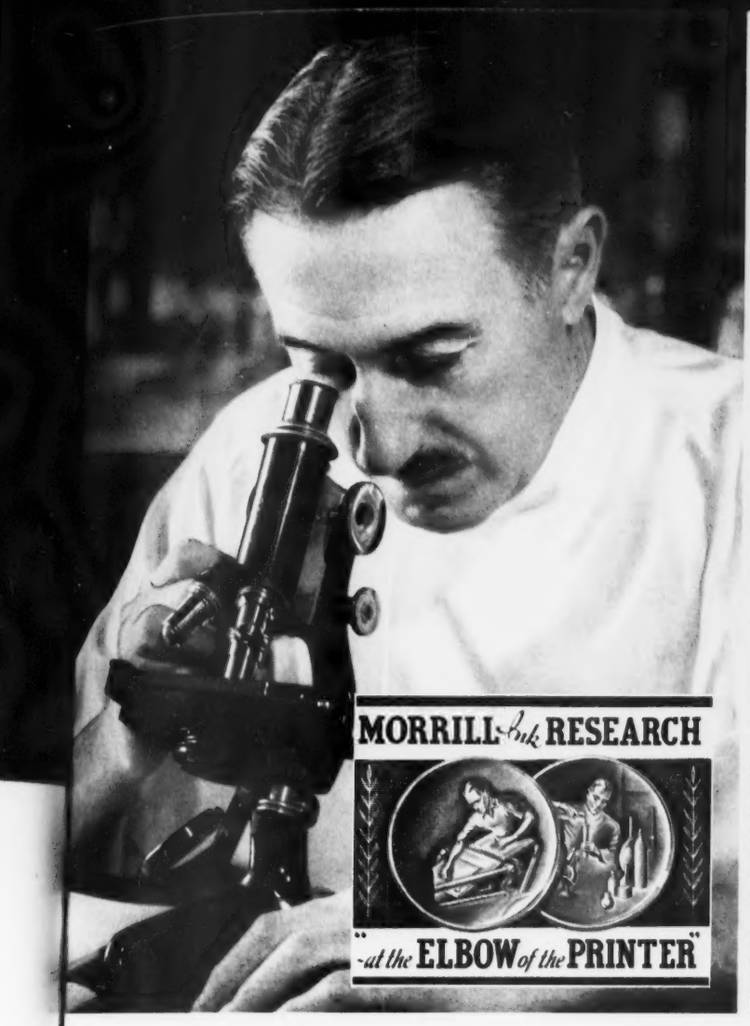

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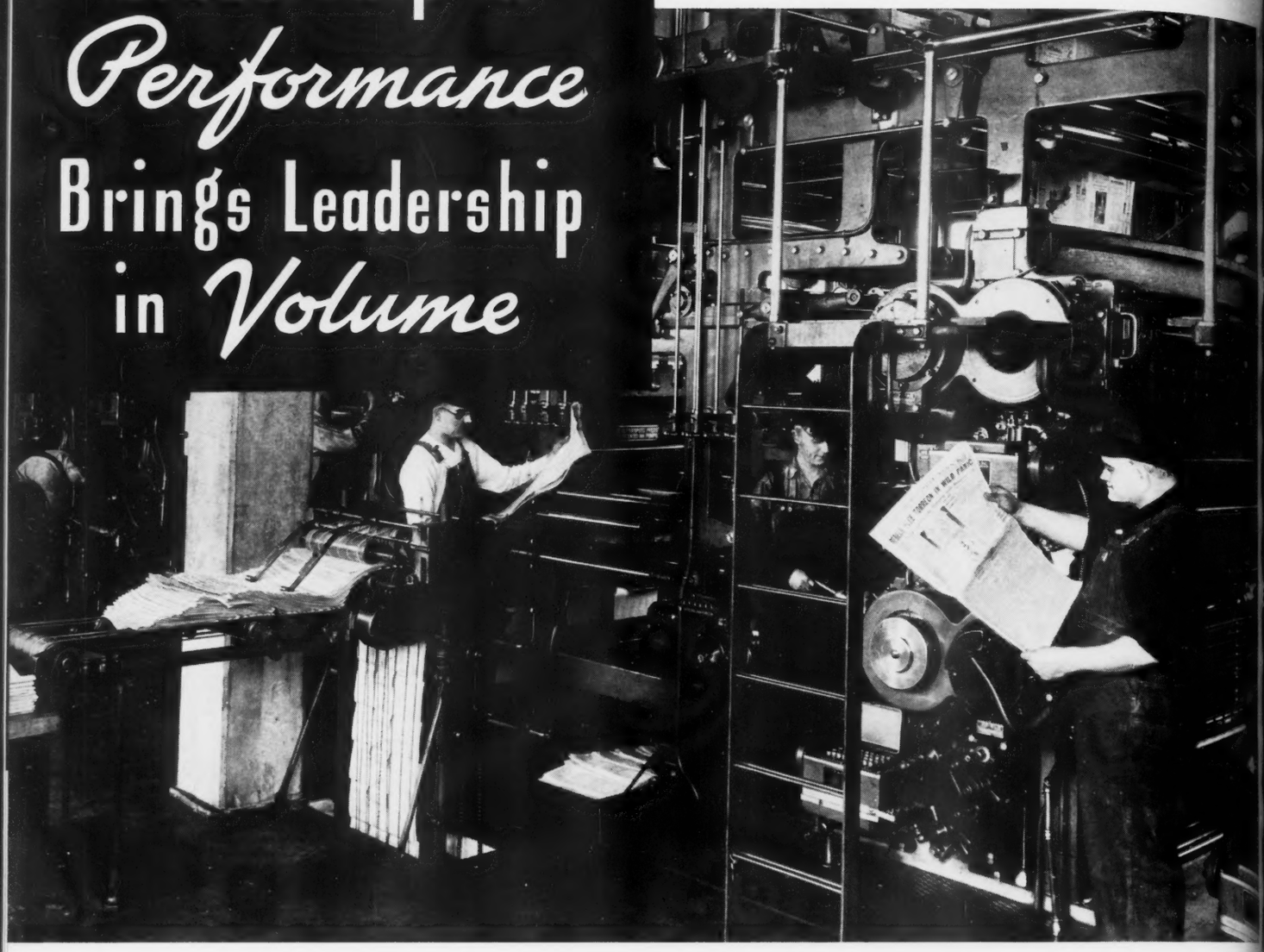
"at the ELBOW of the PRINTER"

MORRILL *Ink* SERVICE

on-the-Job COOPERATION

A century of service... of knowledge, skill and priceless research at the elbow of the printer! This is Morrill's chapter in the story of the advancement of the printing art . . . a vital contribution made by viewing printing problems through the eyes of the working printer . . . thus soundly developing finer inks to facilitate his job, add to his profits and increase the prestige of his craft.

Leadership in *Performance* Brings Leadership in *Volume*



AGAIN America's printing and publishing industry has placed Morrill Inks first in sales volume.

Morrill maintains first place in ink tonnage sold because Morrill gives printers and publishers more of everything they require from ink — clear, sparkling text . . . rich, colorful halftones, smooth, clean-edged impressions . . . trouble-free performance . . . greater economy.

Morrill Inks outsell all others because Morrill's skilled ink engineering includes thorough knowledge of presses and practical pressroom problems as well as a century of leadership in ink chemistry . . . because Morrill ink research has kept steadily ahead of advancing requirements for quality reproduction. And because Morrill service to the users of Morrill Inks is worthy of the world's largest ink-maker.

Leadership in performance creates leadership in volume. Make use of the modernizing benefits which today's fine Morrill Inks can bring to your plant for your specialized ink requirements. There's a Morrill Service Man near you. Call him in.

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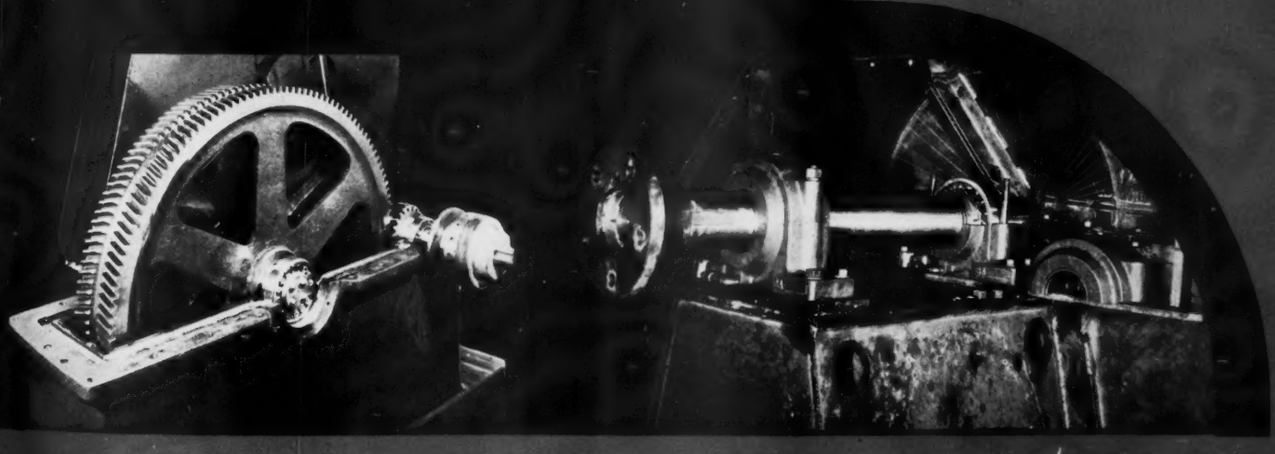
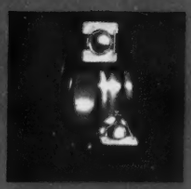


Single Row, Deep Groove Ball Bearing

Single Row, Deep Groove Ball Bearing—Pressed Bronze Cage

Single Row, Deep Groove, Felt Seal Ball Bearing



Single Row, Deep Groove Ball Bearing with Plate

Single Row, Deep Groove Ball Bearing with Snap Ring

Single Row, Angular Contact Ball Bearing, Magneto Type

Self-Aligning Ball Bearing with Steel Cage

Self-Aligning Ball Bearing with Die Cast Bronze Cage

Self-Aligning Ball Bearing, Wide Type, with Steel Cage

Self-Aligning Ball Bearing, Wide Type, with Die Cast Bronze Cage

Self-Aligning Ball Bearing with Adapter Sleeve

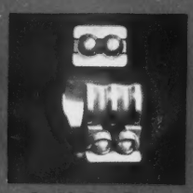
Self-Aligning Ball Bearing, Extended Inner Race

Single Row, Angular Contact Ball Bearing

Single Row, Angular Contact Ball Bearing

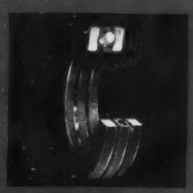
Cylindrical Roller Bearing, Type NF

Cylindrical Roller Bearing with One-Piece Cage, Type NUPM



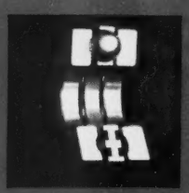
Double Row, Deep Groove Ball Bearing

Double Row, Deep Groove Ball Bearing, with Plate



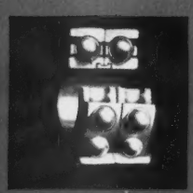
Ball, Thrust Bearing, One-Direction, Flat Seat

Ball, Thrust Bearing, Two-Direction, Flat Seat

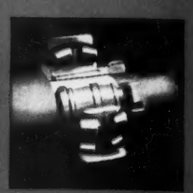


Ball, Thrust Bearing, One-Direction, Flat Seat, Heavy Duty

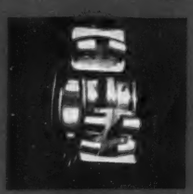
Ball, Thrust Bearing, One-Direction, Self-Aligning



Duplex Angular Contact Type Ball Bearing



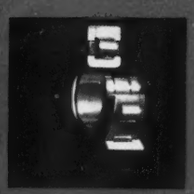
Self-Aligning, Spherical Roller Bearing, SK Type, Adapter Sleeve



Self-Aligning, Spherical Roller Bearing

Self-Aligning, Spherical Roller Bearing with Adapter Sleeve

Double-Row Cylindrical Roller Bearing, Type N-4000K



Cylindrical Roller Bearing, Type NP

Cylindrical Roller Bearing, Type NU

Cylindrical Roller Bearing, Type N

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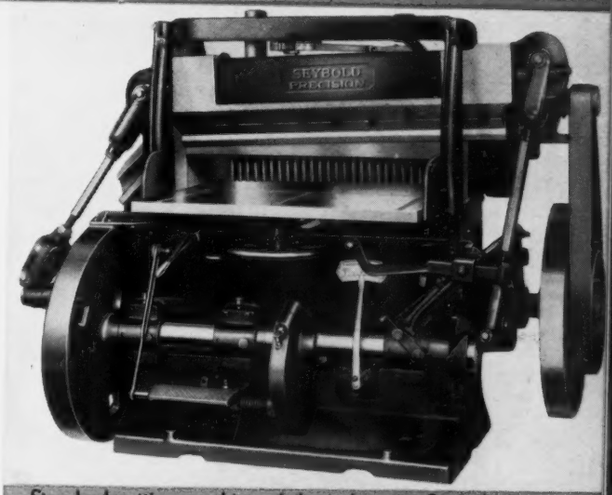
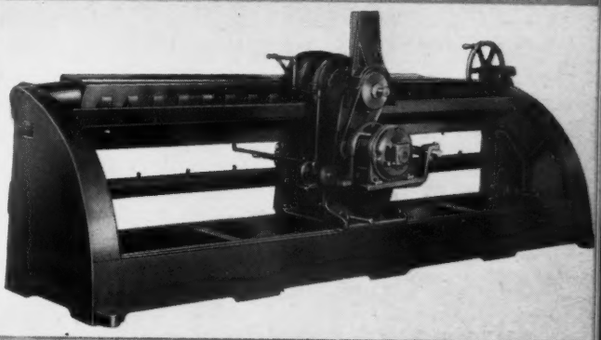
★ Years ago Seybold established its leadership in paper cutting machines, with a reputation for quality and performance and service.

And today, in the showroom or on the production line, you can match Seybold point by point with any other cutting machine on the market and you will quickly prove to yourself that Seybold is head and shoulders above all competitors.

Whether you have a plant that demands continuous, rapid handling and cutting of paper at lowest possible cost, or if your requirement is for a small machine guaranteeing the maximum in precision accuracy, safety and easy operation, you will want a Seybold. In the complete Seybold line you will find just the machine to fit your needs.

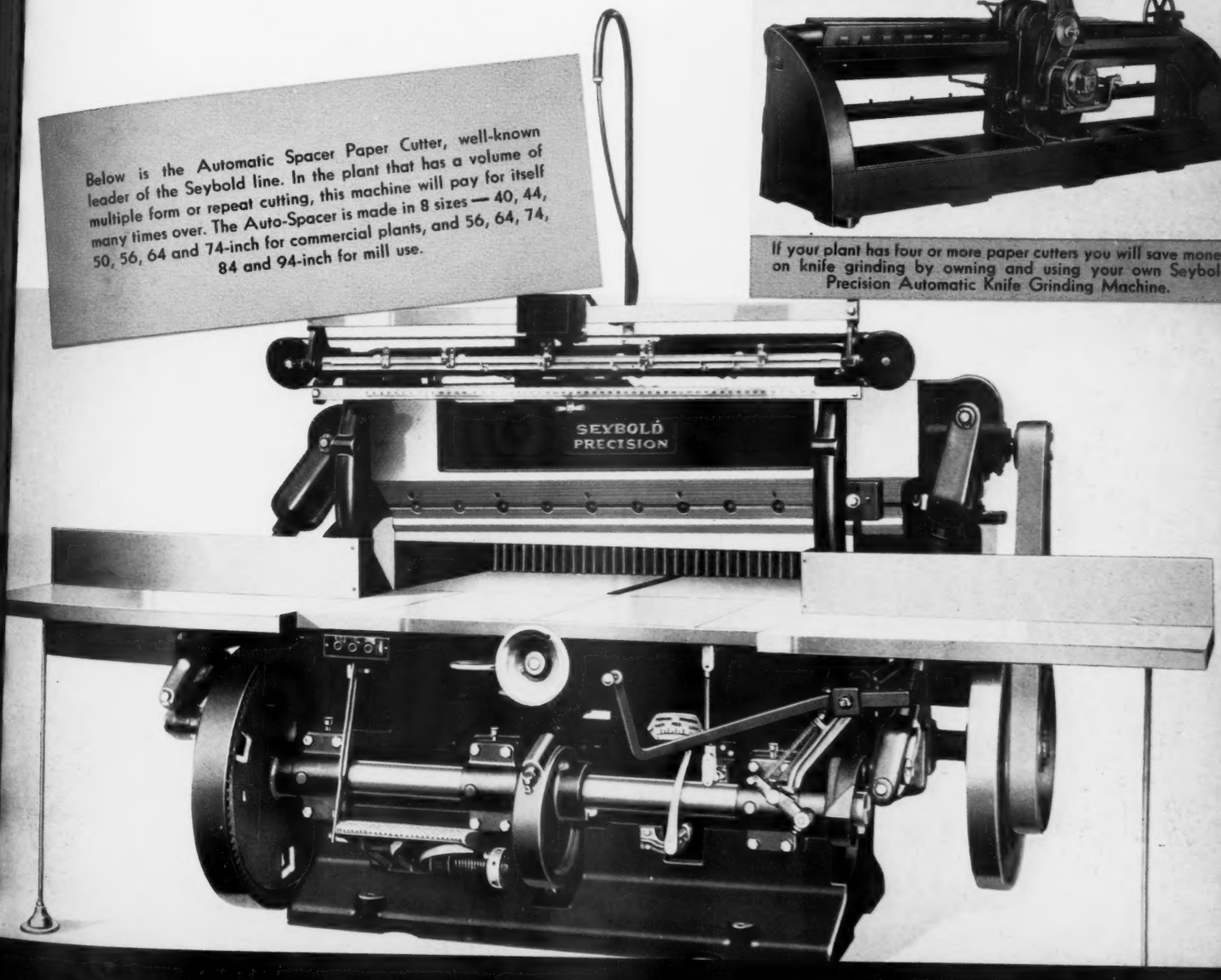


Standard cutting machine of the industry — Seybold Precision Automatic Clamp Paper Cutter. Nine sizes, from 34-inch to 94-inch, including commercial and mill types.



If your plant has four or more paper cutters you will save money on knife grinding by owning and using your own Seybold Precision Automatic Knife Grinding Machine.

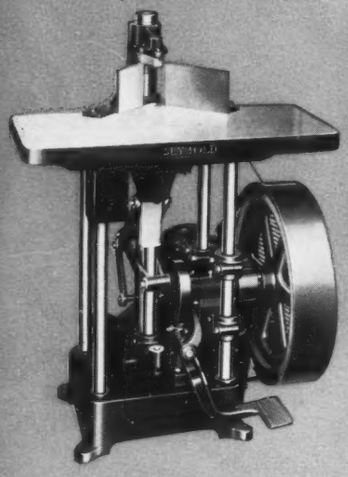
Below is the Automatic Spacer Paper Cutter, well-known leader of the Seybold line. In the plant that has a volume of multiple form or repeat cutting, this machine will pay for itself many times over. The Auto-Spacer is made in 8 sizes — 40, 44, 50, 56, 64 and 74-inch for commercial plants, and 56, 64, 74, 84 and 94-inch for mill use.

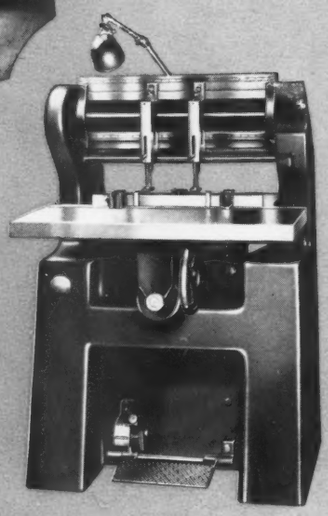


WRIGHT DRILLS AND MORRISON STITCHERS MADE TO MEET YOUR BINDERY NEEDS

At left is Seybold-Wright Single Spindle Drill. A fast-operating machine for drilling one hole at a time.

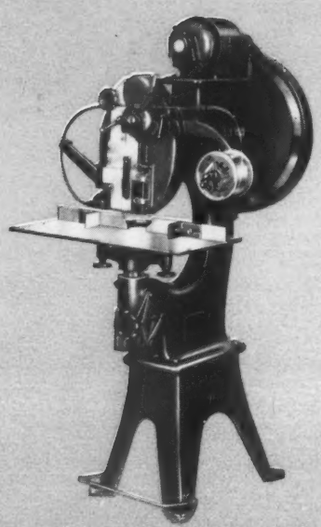
Below is Seybold Round Corner Cutter. Produces perfect corners with minimum handling and maximum speed and efficiency.





Above is the Seybold-Wright Multiple Spindle Drill. Drills two or more holes in one operation. Heads for slotting also available.

Seybold-Morrison Wire Stitcher. Ideal for flat or saddle stitching 2 sheets to ¾-inch. Handles wide variety of materials.



Seybold-Morrison Heavy Duty Wire Stitcher. Heaviest saddle capacity for work up to 1½ inches thick.

These Seybold machines are engineered and built by men long and intimately familiar with bindery problems. Excellent design and expert manufacture insure easy and dependable operation, with exact accuracy and a high rate of work output. Simple and rugged construction means low maintenance costs over a long life, even under heavy production schedules.

Seybold-Wright Drilling Machines

By producing work better and faster, Wright Drills have made obsolete old-fashioned methods of punching round holes or slotted holes a few sheets at a time. Two types of Wright machines are offered—a single spindle drill and a multiple spindle drill—each of which is adaptable to a wide range of jobs.

Seybold-Morrison Wire Stitchers

Thousands of plants have installed Morrison stitchers to speed up work, to increase efficiency, or to cut costs in bindery, packing and shipping operations. Standard book machines handle flat and saddle stitching, as well as such varied jobs as the stitching of book matches, venetian blinds, advertising novelties, food and drug items on display cards, etc. Built for box makers are bottom sealers, top sealers, and combination units.

Seybold Round-Corner Cutters

Particularly adapted to printers, bookbinders and others in the paper converting field is the automatic clamp power round corner cutter. It takes paper or board directly from the cutting machine, in the same height pile, and quickly cuts perfect corners with minimum handling. Substantially lower priced is the foot power round corner cutter, well adapted for the small shop.

Other Bindery Equipment

Other Seybold products include book trimmers, book compressors, die presses, paper punches and embossers. We are staffed and equipped to design and build specialized machines to handle even your most unusual and difficult problems relating to cutting, drilling and stitching. Parts and accessories, as well as machines, are available from sales agents and from the factory:

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Seybold Division Factory, Harris-Seybold-Potter Company

SEATTLE, WASH., SAN FRANCISCO, LOS ANGELES, CAL.
Harry W. Brintnall Company

TORONTO, MONTREAL
Harris-Seybold-Potter (Canada) Limited

SEYBOLD

HARRIS • SEYBOLD • POTTER CO.

Dayton, Ohio

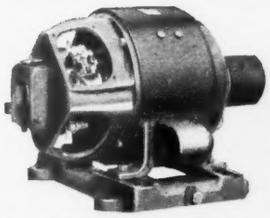
GENERAL ELECTRIC

General Office—SCHENECTADY, N. Y.

SALES AND SERVICE BRANCHES IN THE PRINCIPAL CITIES

COMPLETE A.C. AND D.C. EQUIPMENT FOR THE PRINTING PLANT

Direct Current Constant Speed and Adjustable Speed Motors, Alternating Current Motors Including Constant Speed and Adjustable Speed 2- and 3-Phase, Single-Phase and 3-Phase Brush Shifting Motors. A Complete Line of Magnetic Type Constant Speed and Pre-set Speed Control for All Motors, Covering General and Special Applications, Also Complete Line of Push-Button Stations, Limit Switches, Signal Stations and Other Accessories.



Typical Direct Current Motor

Wound Rotor Induction Motor

General Electric manufactures a complete line of general- and special-service A.C., and D.C., constant- and adjustable-speed motors to fit the power needs of every type of drive. Specify that your pressroom be electrically equipped throughout by General Electric—and from one end to the other, every motor, every controller—every piece of electric equipment will bear the G-E monogram—the symbol of unit responsibility and the mark of dependability.

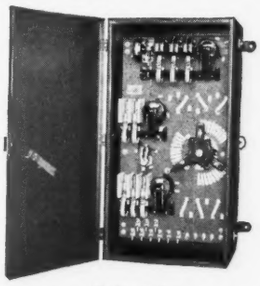
For Single-Phase Service

The G-E Type RB single-phase, brush-shifting motor, together with suitable brush-shifting controller (both illustrated) is a perfected drive for small job presses requiring ¼ H.P. to 3 H.P. This motor has a wide speed range even at light loads, with good economy at all speeds. It is most effective when used with the type of G-E control illustrated, which gives a ready indication of speed and permits easy resetting for register work.

A. C. CONTROL

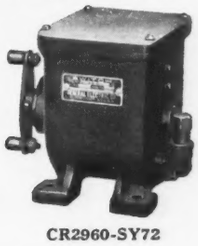
G-E Type CR6133 controllers are recommended for automatic job presses, flat-bed presses, lithograph presses, offset presses, waxing machines, small rotary presses, and similar machines requiring high starting torque, slow-down, job-reverse, and automatic quick-stop. Horsepower range 1 to 15.

CR6133-P5—7½ H.P. to 15 H.P.



CR6133-C3

For medium or large flat-bed presses, lithograph presses, cutters, creasers, and small rotary presses or machines requiring the slow-down feature, specify the CR6133-C3 Controller, with or without high starting torque. Horsepower range is 1 to 15.



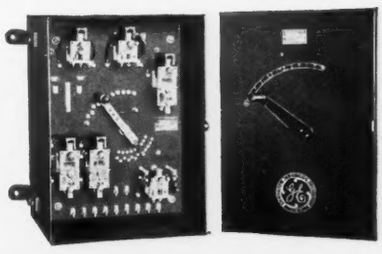
CR2960-SY72

The quick-stop feature is obtained by the use of the CR2960-SY72 relay used in connection with those controllers employing a reverse contactor.

D. C. CONTROL

For control of machines such as large offset presses, color presses, bag machines, etc., which require high torque for starting together with slow-down control, General Electric recommends the CR6344-A1 controller. Jog-reverse operation may be obtained in a similar-purpose controller designated as CR6344-B1.

CR6344-B1



CR6341-D2

The CR6341-D1 type controller is used for controlling such machines as small rotary presses, waxing machines, and cutting and creasing machines, requiring variable-speed operation and slow-down feature. The CR6341-D2 controller is similar to the D1, but has the additional jog-reverse feature.

CR2940 push-button stations as illustrated are available for use with semi-magnetic and magnetic—either A.C. or D.C.—printing press controllers. Located on the press these push-button stations bring greatest flexibility and convenience of operation.

Fast; Forward; Jog; Jog Forward; Jog Reverse; Reverse; Run; Safe; Slow; Stop.

For more than a quarter of a century, General Electric equipment has been designed and manufactured to meet the electrical needs of the printing plant—no matter whether it be large or small. When buying electric equipment for your pressroom, look for the G-E monogram—it is your assurance of constant quality and dependability.

For complete Information on Any Electrical Equipment Address Your Nearest General Electric Office.

GENERAL ELECTRIC

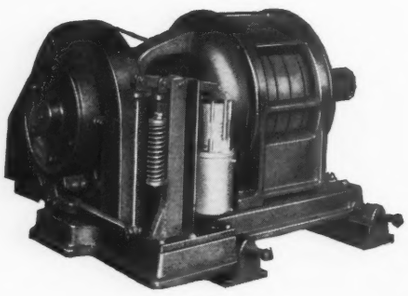
General Office—SCHENECTADY, N. Y.
SALES AND SERVICE BRANCHES IN THE PRINCIPAL CITIES

COMPLETE ELECTRICAL SERVICE FROM ONE MANUFACTURER

Audible and Visual Safety Signal Systems, Cylinder Brakes, Electric Heating Equipment, Indicating Instruments, Motor Drives, Paper Break Detectors, Press Controls, Push Button Stations, Recording Instruments, Switchboards, Switchgear, Transformers, Web Breakers, Etc.

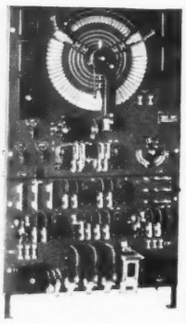
The publisher who turns to General Electric for the electric equipment for his pressroom takes into account a service that is unique in its completeness. Specify that your pressroom be electrically equipped throughout by General Electric—and from one end to the other, every motor, every controller—every piece of electric equipment will bear the G-E monogram—the symbol of unit responsibility and the mark of dependability.

FOR THE A. C. PLANT



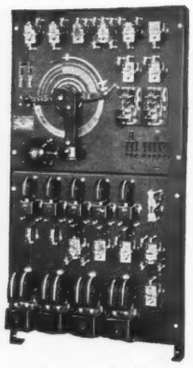
Typical Double Motor A.C. Drive

Below: Control For This Drive



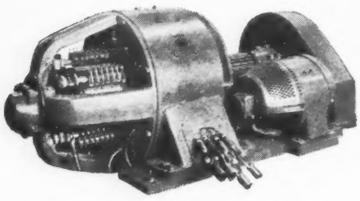
Double motor drive equipments are available from 5 H.P. for the smallest press to 200 H.P. for the mighty high-speed presses of the metropolitan dailies. Complete equipment including full-automatic control and reliable push-button stations giving maximum convenience and flexibility of operation is available.

FOR THE D. C. PLANT



Representative Double Motor D.C. Drive and full Automatic Control Panel

General Electric offers a complete line of double-motor D.C. drives comparable in size and rating to those offered for A.C. service and including suitable automatic control and push-button stations and signal equipment, together with all accessories.



There is a G-E office near your plant, and there you will always find G-E specialists who are ready and willing to help you solve your power problems.

FUNDAMENTAL NECESSITIES

Transformers — Switchgear —Switchboards — Indicating Instruments — Recording Instruments — Electric Heating Equipment.

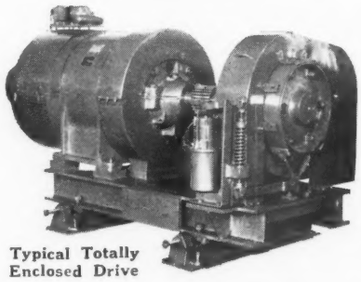
Every stereotype furnace made by Duplex Printing Press Co., R. Hoe & Co., Walter Scott & Co., and Wood Newspaper Machinery Corp. can be quickly and economically fitted with electric heat.

Stereotype Unit

A.C. COMMUTATOR-TYPE MOTOR DRIVES

General Electric has available a complete line of commutator-type motor drives for special applications. These equipments provide high efficiency at all speeds, close regulation, and a high degree of flexibility. These drives can be arranged for parallel operation, and for manual, or full automatic control.

SPECIAL EQUIPMENT FOR GRAVURE PLANTS



Typical Totally Enclosed Drive

To meet the safety requirements for gravure press drive General Electric has developed a complete line of totally enclosed separately forced-ventilated and explosion-proof drives for both alternating and direct current and a complete line of explosion-proof accessories for mounting on the press. This includes explosion-proof cylinder lift motors, ink pump motors, push-button stations, limit switches and paper break detectors.

Explosion-proof Push-button Station

For Complete Information on Any Electrical Equipment Address Your Nearest General Electric Office.

Why MATRIX CONTRAST SERVICE *pays big dividends*

Estimate the total cost per year of operating a Linotype or Intertype, including labor as well as all machine costs. Now figure 4% of that total. There you have, approximately, the annual saving effected by BLACK & WHITE Matrix Contrast Service.

This service is guaranteed to reduce total errors in original machine composition at least 25 per cent . . . and the actual average is nearer 35 per cent. This means a large saving of time in setting correction lines and in placing them in galleys or forms. In addition, Matrix Contrast reduces eye-fatigue, conserves energy, and promotes increased production.

It's a good proposition. That's why so many newspapers and other plants are using it. *Write for particulars.*

MATRIX CONTRAST SERVICE CAN BE INSTALLED ON A PAY-AS-YOU-PROFIT BASIS

MATRIX CONTRAST CORPORATION

EMPIRE STATE BUILDING, NEW YORK

EUROPEAN AGENTS: FUNDITOR, LTD.
3, Woodbridge Street, Clerkenwall Green, London, E. C. 1

Sole Licensees of the Percy L. Hill Matrix Contrast Patents Nos. 1,466,437 and 1,796,023

Like spotlighting every error before the line is cast . . .

Do you think the above picture is exaggerated? It is not. The reference characters within the "spotlight" were treated by the Black and White Matrix Contrast process. The other reference characters are the regular characters common to ordinary matrices. Now you can see how Matrix Contrast prevents errors. Now you can understand how we can GUARANTEE a reduction of total errors in original machine composition of at least 25 per cent. Matrix Contrast service saves time for operators, proofreaders, and floor men—at the same time increasing production by preventing eye-strain and resulting fatigue. Write for full particulars.

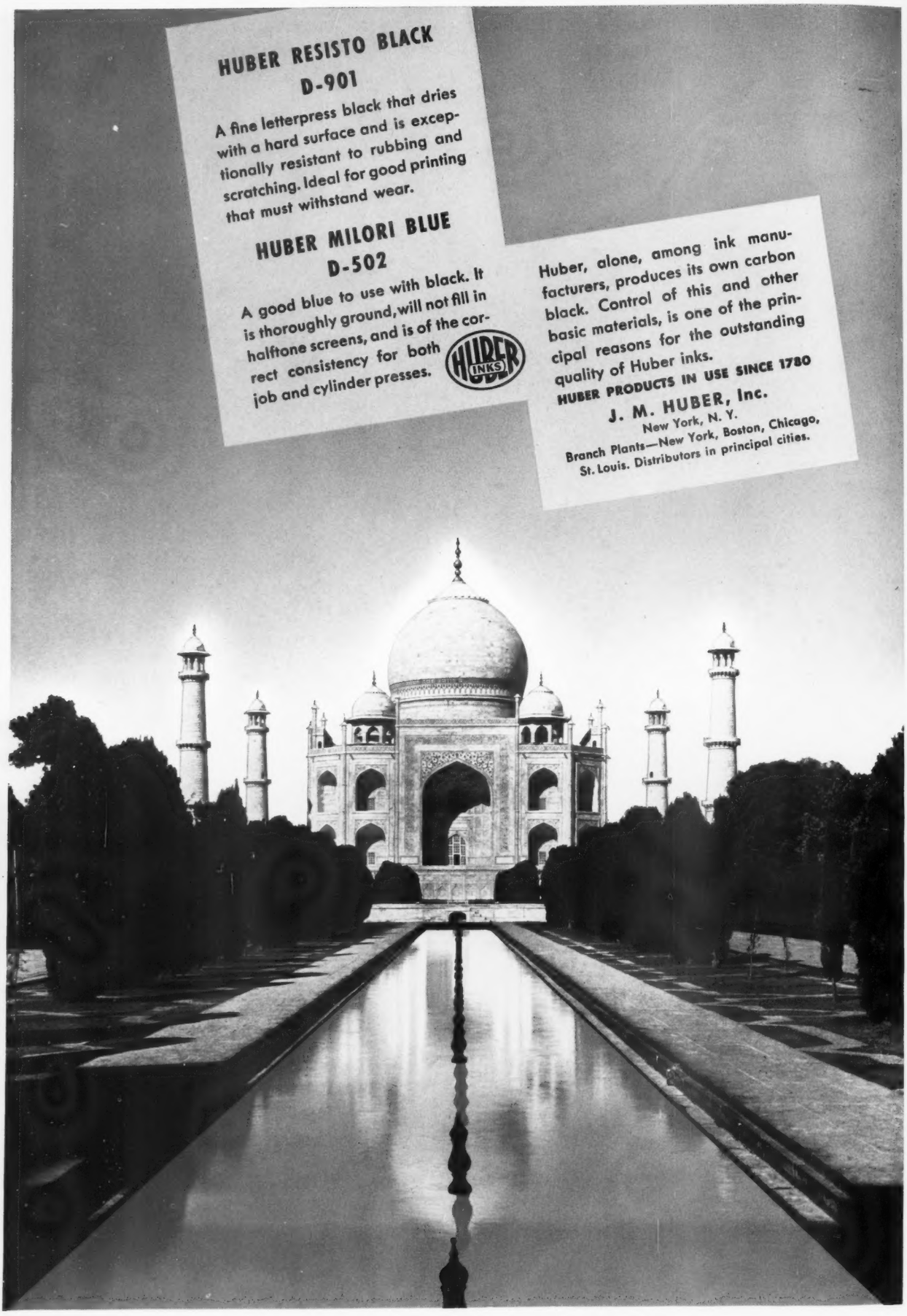
The Black and White process saves money by preventing errors. No new equipment is needed, no floor space. There's nothing extra for anybody to do—and no additional costs other than a moderate service charge.

MATRIX CONTRAST CORP'N, Empire State Building, New York

SOLE LICENSEES OF THE PERCY L. HILL MATRIX CONTRAST PATENTS NOS. 1,466,437 AND 1,796,023.

HUBER IMPERIAL BLACK D-902
—A strong-toned, quick-drying, letterpress black that shows a decided iridescence on solids. Recommended for printing good quality magazines and catalogs in which halftones with solids predominate.
HUBER FIRE RED D-105—A popular, bright red of great color strength and light specific gravity. Use it in combination with black as illustrated here, or for line plates, type headings, and borders, which greatly enliven a black page.
HUBER INKS
It is significant that Huber controls every step in the production of its inks. Even the raw materials are produced in its own plants. From such rigid control comes the high and uniform standard of quality that has characterized Huber products since 1780.
J. M. HUBER, Inc.
New York, N. Y.
Branch Plants — New York, Boston, Chicago, St. Louis. Distributors in principal cities.

Photograph courtesy of Shepherd Knitwear Company, Inc., New York



HUBER RESISTO BLACK
D-901

A fine letterpress black that dries with a hard surface and is exceptionally resistant to rubbing and scratching. Ideal for good printing that must withstand wear.

HUBER MILORI BLUE
D-502

A good blue to use with black. It is thoroughly ground, will not fill in halftone screens, and is of the correct consistency for both job and cylinder presses.

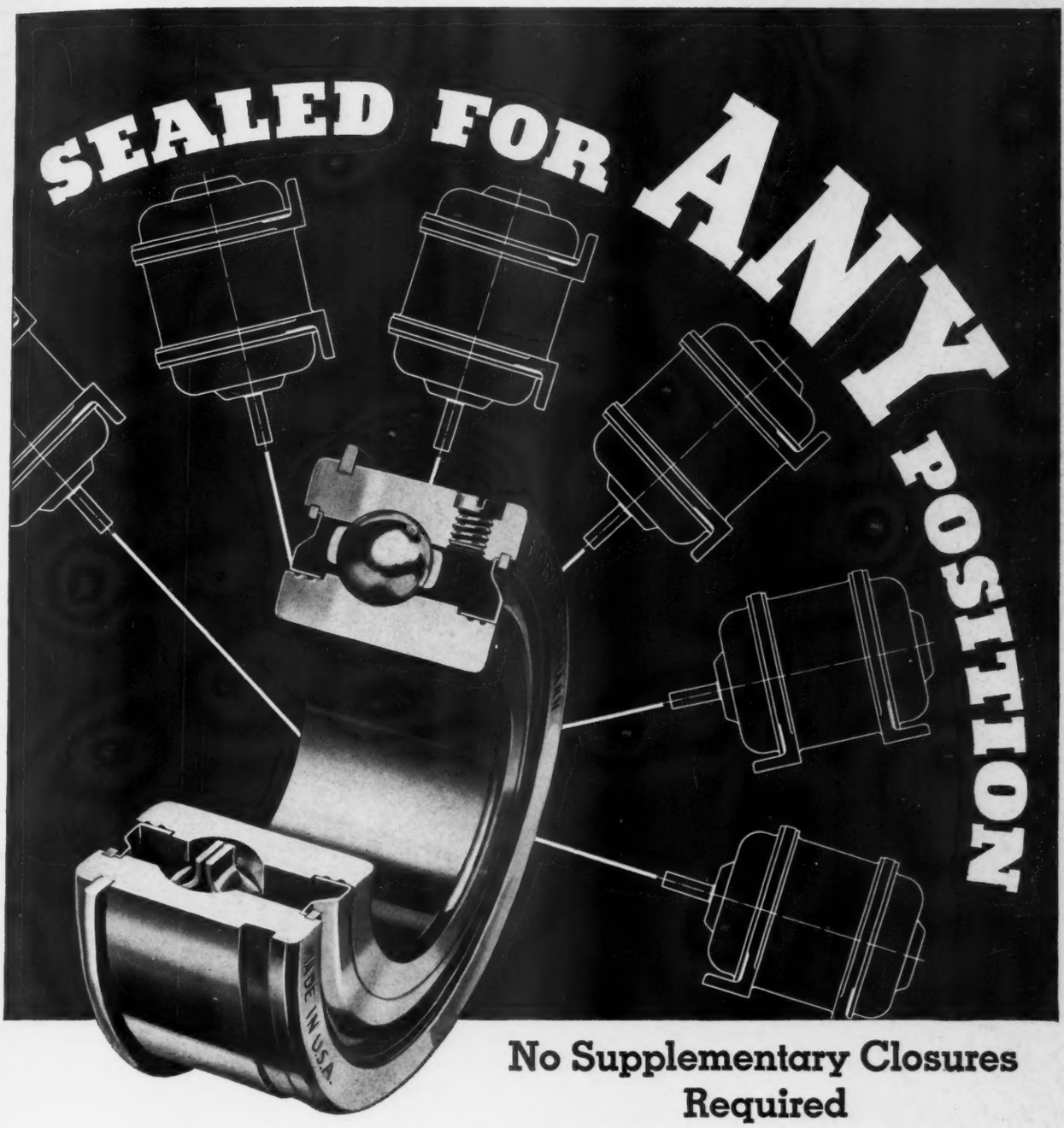
HUBER INKS

Huber, alone, among ink manufacturers, produces its own carbon black. Control of this and other basic materials, is one of the principal reasons for the outstanding quality of Huber inks.

HUBER PRODUCTS IN USE SINCE 1780

J. M. HUBER, Inc.
New York, N. Y.

Branch Plants—New York, Boston, Chicago, St. Louis. Distributors in principal cities.



No Supplementary Closures Required

Regardless of the angle of the shaft—horizontal, vertical, or in between—the "CARTRIDGE" BALL BEARING seal, with its long flange, minute clearance, recessed inner ring construction and multiple grease grooves, KEEPS THE GREASE IN AND THE DIRT OUT.

Thoroughly tested in our own laboratory over a protracted period, and in the field under continuous duty, the "CARTRIDGE" BALL BEARING has demonstrated not alone its value but its SUPERIORITY.

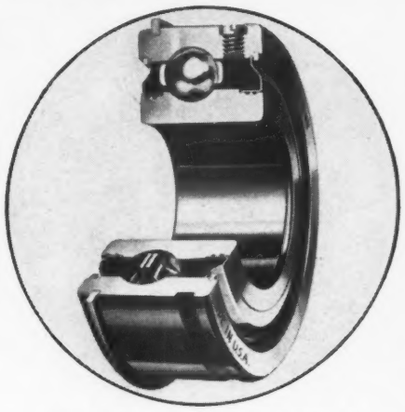
One of the largest motor manufacturers equipped a vertical motor with "CARTRIDGE" BALL BEARINGS and after running it on test over four years, nine hours a day, five days a week, writes:—"*we have added no grease to either bearing and have observed no leakage*". This test motor is still running, with the same results.

Adopt the fully-sealed "CARTRIDGE" BALL BEARING as absolute protection against leakage, neglected lubrication, and dirt and grease contamination. It also eliminates numerous supplementary closure parts, machining operations and variables, and speeds up production. Moreover, it has convenient regreasing and inspection features.

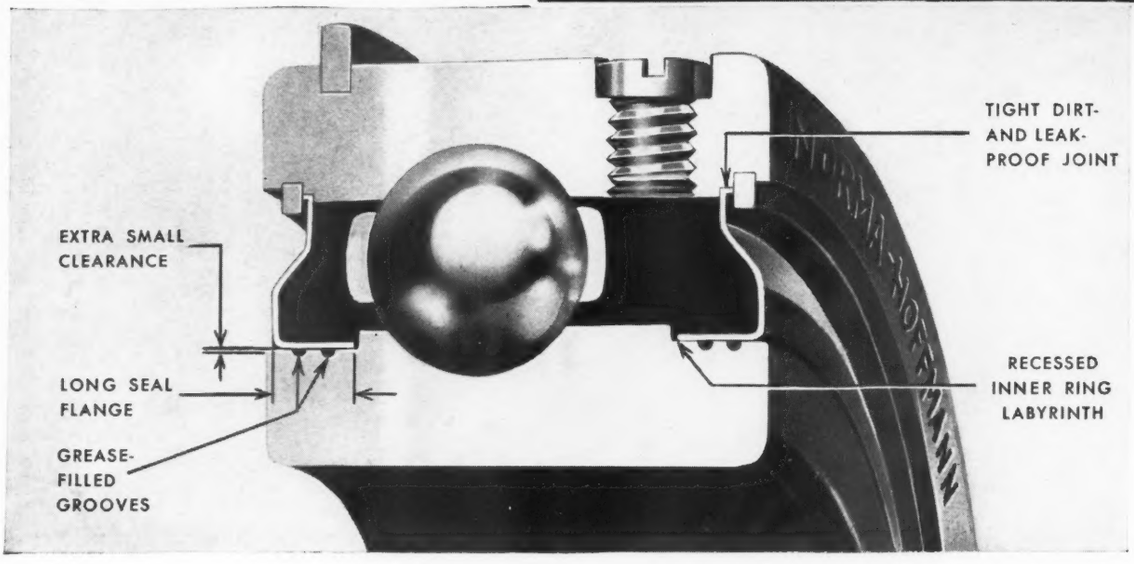
Write for the Catalog. Let our engineers work with you.

NORMA-HOFFMANN BEARINGS CORPORATION, STAMFORD, CONN., U. S. A.

FULLY PROTECTED AGAINST DIRT



Made to Standard Double-Row Widths
WITH 100% GREATER GREASE CAPACITY



A clean, well-lubricated bearing is practically wearless. Dirt, however, will relentlessly destroy it. KEEP DIRT OUT AND KEEP THE GREASE IN, and you are protected against noise, rejections, and premature wear.

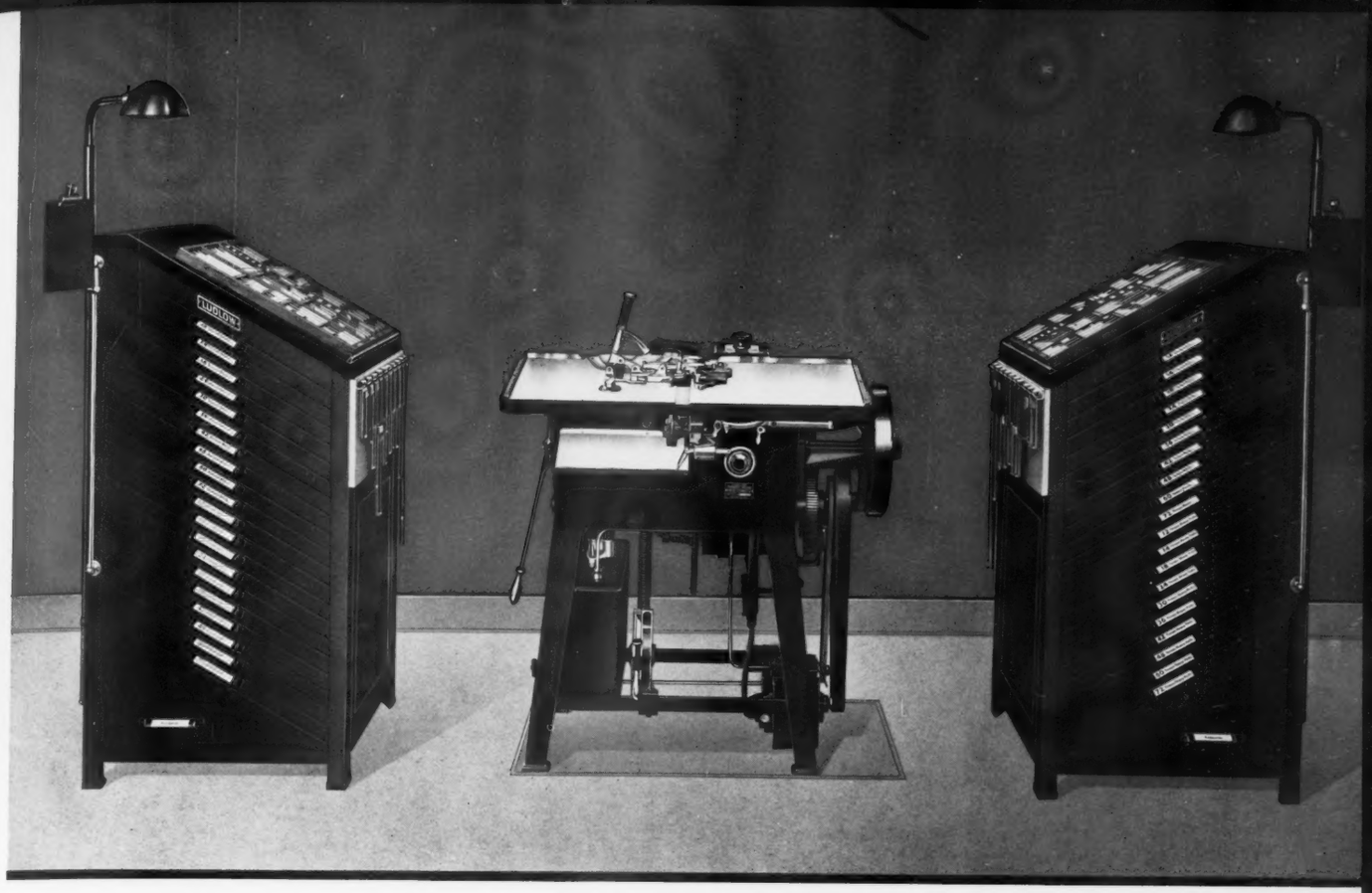
In the illustration herewith, note the five distinctive features that exclude dirt from the "CARTRIDGE" BALL BEARING. That minute clearance between the long seal flange and recessed inner ring is ALWAYS filled with grease. The grease grooves in the inner ring are so many added "dams" against the entrance of dirt.

Thus, without any additional closures, the integral "CARTRIDGE" seals KEEP THE DIRT OUT AND THE GREASE IN—regardless of the position of motor or unit. In assembling or disassembling in the shop, the "CARTRIDGE" BALL BEARING STAYS CLEAN because its internal parts are never exposed.

Adopt the "CARTRIDGE" BALL BEARING as insurance against dirt and grease contamination, and against neglected lubrication. It eliminates numerous supplementary closure parts and machining operations and variables, and speeds up production; and it has convenient regreasing and inspection features.

Write for the Catalog. Let our engineers work with yours.

NORMA-HOFFMANN BEARINGS CORPORATION, STAMFORD, CONN., U. S. A.



See the Ludlow

at the show

GRAPHIC ARTS EXPOSITION
EXHIBITOR
NEW YORK SEPT 25 TO OCT 7 1939
BOTH INCLUSIVE

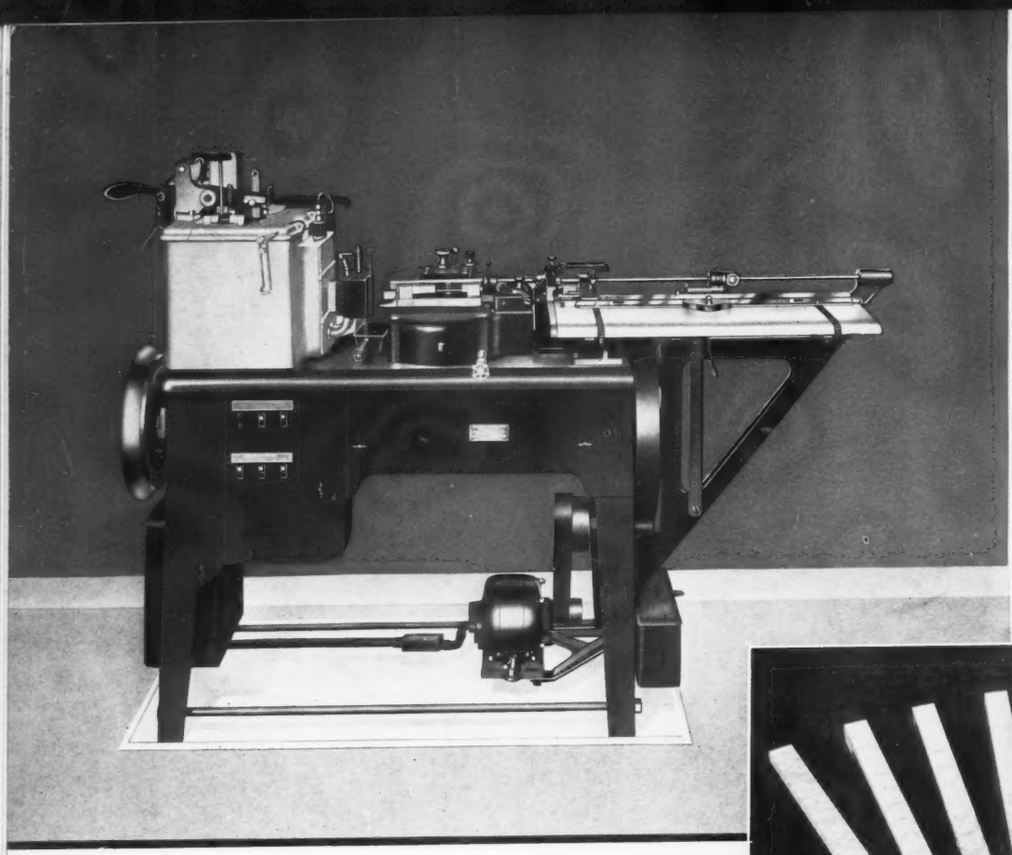
- See it in operation, demonstrating the simplicity and ease of Ludlow composition and proving every claim made for it.
- See the amazing speed of matrix gathering.
- See how rapidly and easily spacing and justifying are accomplished.
- See how spacing "tight to lift" is eliminated.
- See how quickly a change of size or face is made.
- See the efficiency of Ludlow all-slug make-up.
- See the simplicity and speed of Ludlow ruleform composition and make-up
- See how the quality of Ludlow faces reduces makeready.
- See how little space is required for a complete Ludlow installation.
- See how and why the Ludlow actually cuts operating costs and increases profits.
- See specimens of the distinguished Ludlow modern and traditional typefaces which will build business for you.

Seeing is believing, and you'll find it well worth while to see all advantages demonstrated in the Ludlow exhibit in **Booth 104**

LUDLOW TYPOGRAPH COMPANY

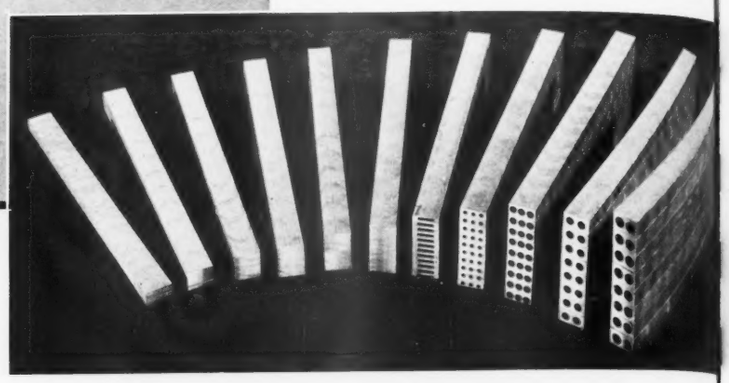
2032 Clybourn Avenue • • Chicago, Illinois

et in Ludlow Radiant Heavy and Radiant Medium



The Elrod lead, slug, rule and base caster produces an unlimited supply of strip material from 1-pt. to 36-pt. in thickness and in any desired height.

Elrod precision-cast strip material is free from brittle breaks and welds and stands up under severe stereotyping pressures.



See the Elrod at the Show

- See how simple and easy it is to operate.
- See how simple it is in mechanism.
- See how this one machine produces strip material ranging in thickness from 1-pt. to 36-pt. in any desired height or length.
- See how the molten metal is formed under pressure into a continuous strip as it passes through the water-cooled mold.
- See how and why Elrod-cast strip is so solid and free from brittle breaks and welds.
- See why Elrod base stands up under the most severe mat rolling pressures.
- See how Elrod cuts down composing room costs by providing an abundant supply of leads, slugs, rules and base at all times.
- See how the Elrod operates continuously, yet requires only the part-time attention of one man to replenish metal supply and remove stacked lengths of strip.
- See how little floor space is required by the remarkably efficient and versatile Elrod.

Seeing is believing, and you'll find it well worth while to see all advantages demonstrated in the Elrod exhibit in **Booth 104**

LUDLOW TYPOGRAPH COMPANY

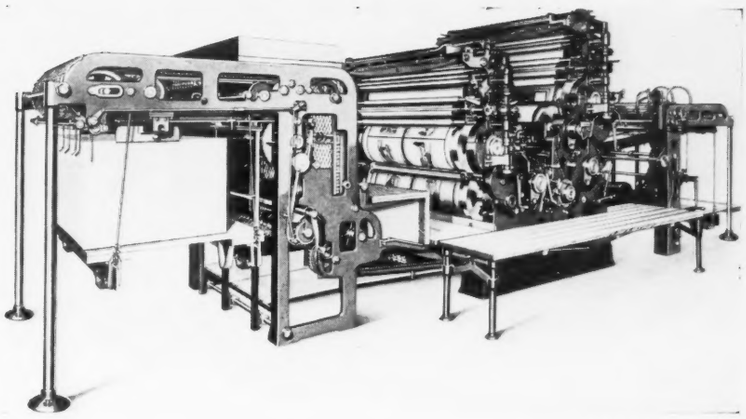
2032 Clybourn Avenue • • Chicago, Illinois

Set in Ludlow Radiant Heavy and Radiant Medium

ELECTRICAL EQUIPMENT

for

All Types of PRESSES



CLINE-WESTINGHOUSE Offers the Standard of Electrical Equipment *plus* SPECIALIZED SERVICE TO THE PRINTING TRADE

● LEADING printers specify CLINE motor and control equipment. We furnish equipment to operate any make of machine used by the Printing and Allied trades, from the smallest stitcher to the largest newspaper press. To insure getting high grade standard motor and control equipment, specify "Cline-Westinghouse" in your machine contracts.

In ordering CLINE equipment you receive Motors, Controllers and Push Button Stations all made and tested by one Company, thus placing the printer in position to standardize his motor and control equipment. This will simplify the care and maintenance and assure the most efficient and reliable operation at low cost.

Safety is the noteworthy feature of CLINE equipment. Your operators are absolutely protected from electrical accidents that in poorly designed apparatus might mean the loss of life or serious injury. Safety features are incorporated in the construction of all of our apparatus.

CLINE ELECTRIC MFG. CO.

Main Office: 211 W. Wacker Drive, Chicago, Ill.

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SAN FRANCISCO, CAL.

CLINE SYSTEM — QUALITY NAME SERVICE FAME — CLINE ELECTRIC MFG. CO. CHICAGO — CLINE WESTINGHOUSE

Eastern Office:
220 East 42nd Street
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Specify **"CLINE" . . . . .**

PRESS DRIVES and CONTROLS

FOR ALTERNATING OR DIRECT CURRENT

REELS (Quick Acting Chucks and Margin Control)

For Any Size Paper Roll

WEB TENSIONS (The Only Tension Adjustable from Press Unit)

For Automatic Control of Paper Tension

HIGH SPEED PASTERS

(DO NOT CHANGE TENSION VALUE-LOW FIRST COST)

For Continuous High Speed Operation

Safe • *Simple* • *Reliable*

PLANTS WITH RECORD OF HIGHEST SPEED AND LARGEST EDITIONS USE CLINE EQUIPMENT

The Cline System Includes . . .

Unit Press Drive and Control
Double Motor Drive and Control
Magazine Type Single Motor Control
Special Color Press Control
Stereotype Motor Equipment
Cline Reels & Automatic Electric Tension
Cline High Speed Pasters
Paper Roll Conveyors
Plate Conveyors and Droppers
Typesetting Machine Drives

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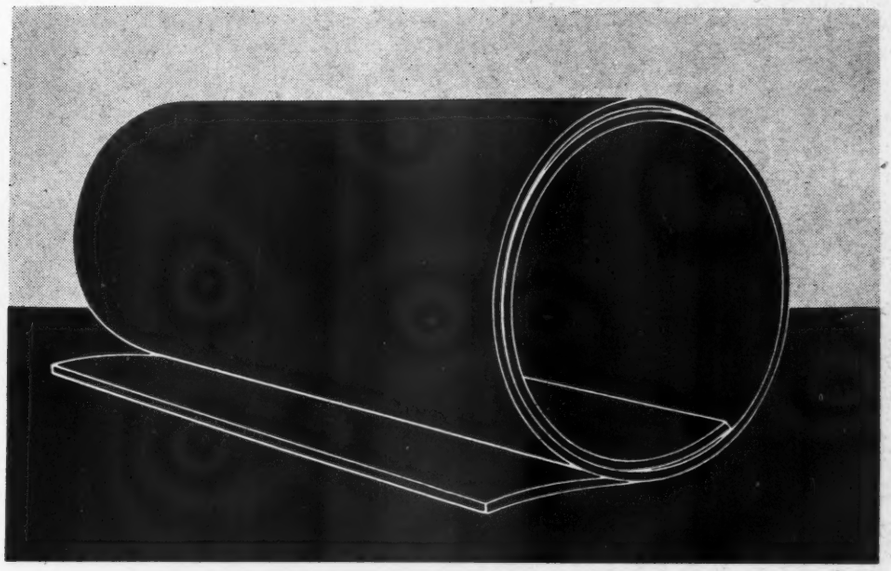


VULCAN

OFFSET BLANKETS *and* LITHOLASTIC INKING ROLLERS

Most lithographers and offset printers are using Vulcan Offset Blankets. Backed by long experience in offset blanket manufacture, and by a reputation for fair dealing, these blankets offer you splendid presswork and economical, durable, trouble-free service. Vulcan Litholastic Rollers, too, promote good printing and economical press operation.

Write for particulars and recommendations.

VULCAN PROOFING COMPANY

FIRST AVENUE AND 58th STREET • BROOKLYN, N. Y.

Sales Representatives in Principal Cities

They're SOFT...
but they can take it!

You can't get good ink distribution with a hard roller—or with a roller that starts out soft but gradually grows harder as time goes on.

Vulcan Gelastic Rollers are soft—and they stay soft. At the same time they have what it takes to withstand the attacks of extreme heat, cold, and humidity, and oils, driers, washers, etc., as well as the day-in and day-out pounding of hard service.

By eliminating press delays due to roller troubles, and because of their remarkable durability, Vulcan Gelastic Rollers effect large savings. Write for particulars and recommendations.

NEW VULCAN PRESS PACKING

Paper base, rubber coating, one side oil-proof. Used either with or without tympan, on all types of presses. Write for details.

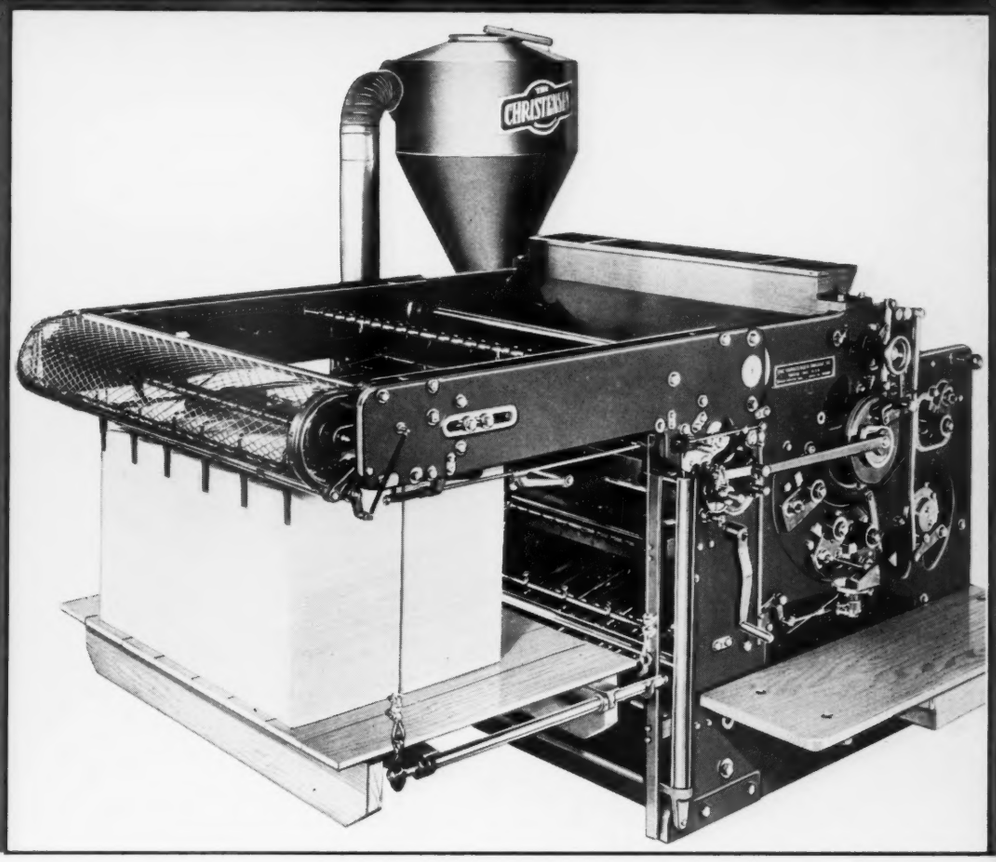
•

VULCAN PROOFING COMPANY
First Avenue and 58th Street, Brooklyn, N. Y.
Sales Representatives in Principal Cities

VULCAN
GELASTIC INKING ROLLERS

More Profits for You — *with* Christensen Equipment

You, too, will say —"We got the 'bugs' out of our bronzing operation—with the



Christensen High-Speed Bronzer"

in action **at the Show — spaces 253-254**

Some of the "bronzing bugs" you get rid of with the Christensen

1. NO SLOW PRODUCTION—operate your fast presses at normal speeds.
2. NO ANNOYING DELAYS to knock the profit out of your cost estimates—you maintain speed and quality, hour after hour, in time with the press.
3. NO IMPERFECT SHEETS—dusting on both sides insures clean sheets and smiling customers.
4. NO FUSS, MESS, BOTHER—just a fast, smooth, clean, dependable operation that makes money.

Yes, that's what you'll say when you see it in operation at the Show, and install one as soon as you get back home.

Bronzing becomes as simple as any other press operation. You get cleaner sheets — because this modern machine DUSTS BOTH SIDES OF SHEET on face of solid cylinders. Your pressroom is free from bronze dust, because Christensen Bronzers are comparatively bronze-tight . . . are equipped with exhauster and bronze collecting system.

Production volume steps UP. The Christensen is geared to, and driven by, press. Delivers sheet for sheet in time with fast equipment, under gripper control. Cleaning rolls and exhauster driven independently, assuring uniform quality at any press speed . . . good-looking work that builds your reputation and brings more business.

Production costs go down, putting you in a position to compete and make money. Cost surveys in representative plants show yearly savings of $2,000 to $5,000 a year.

Learn how to take the "headache" out of bronzing. Visit spaces 253-254 at the Show to see the Christensen High-Speed Bronzer in actual operation, along with other famous Christensen equipment.

THE CHRISTENSEN MACHINE COMPANY

100 FOURTH STREET, RACINE, WISCONSIN

BRANCH OFFICES AND DISTRIBUTORS IN UNITED STATES AND CANADA

More Profits for You — *with* Christensen Equipment

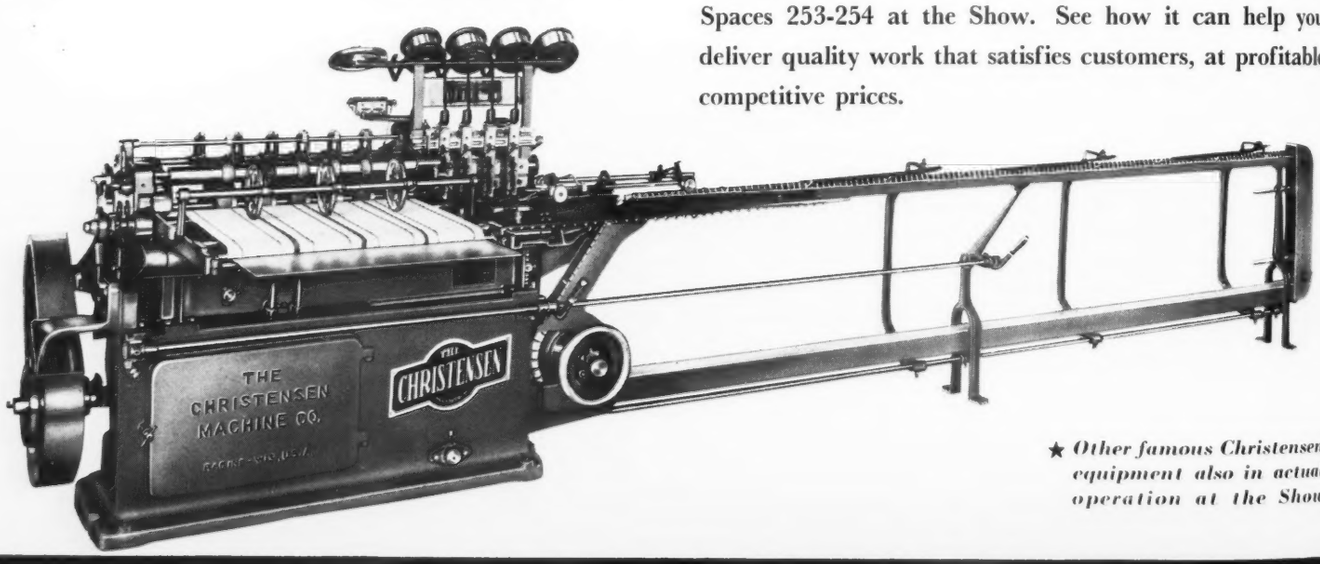
See how to handle all saddle-stitching — big runs or little jobs — at a profit

★ with the Christensen Multiple-Head Gathering and Stitching Machine

In Action! . . **Spaces 253 - 254 at the Show**

Running at speeds up to 9,000 operations per hour, the Christensen Multiple-Head Gathering and Stitching Machine keeps pace with your high-speed folders. With a single unit you can match the output of three or four pamphlet stitchers. You reduce two operations to one—books inserted on the machine are stitched automatically, without additional labor cost or handling. Easily and quickly adjusted. Staples are well-placed and uniform. Signatures are regular. Work is delivered in neatly stacked order. There is less spoilage and smearing of work.

Be sure to inspect the Christensen Multiple-Head Gathering and Stitching Machine in actual operation in Spaces 253-254 at the Show. See how it can help you deliver quality work that satisfies customers, at profitable competitive prices.



★ *Other famous Christensen equipment also in actual operation at the Show*

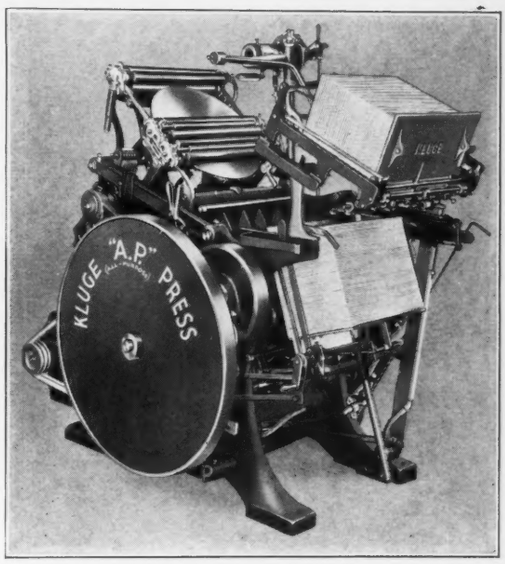
THE CHRISTENSEN MACHINE COMPANY

100 FOURTH STREET, RACINE, WISCONSIN

BRANCH OFFICES AND DISTRIBUTORS IN UNITED STATES AND CANADA

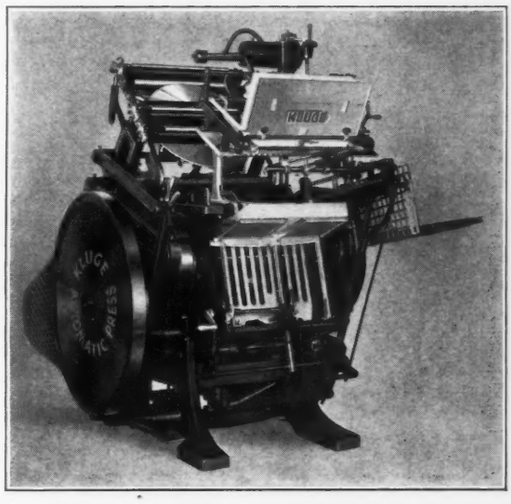
A "KLUGE" Press for Every Shop

The KLUGE "AP" PRESS
(All-Purpose)



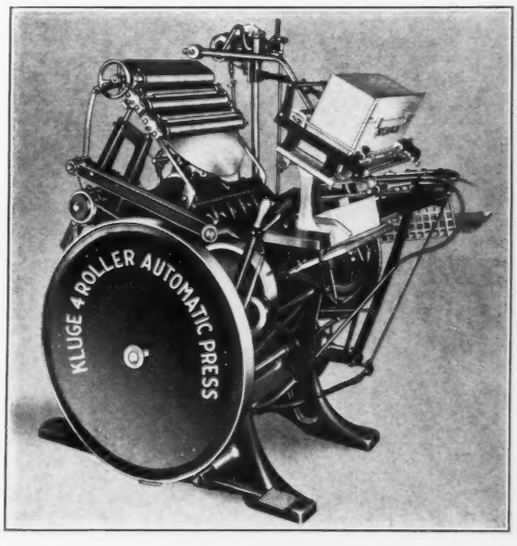
The *new* Kluge "AP" (All-Purpose) Press leads the automatic job press field in Efficiency *plus* Versatility. This press is designed to handle the widest possible range of work from onion skin to ¼ inch board, irregular shaped died out pieces and uneven stocks such as tags, booklets, etc., all by means of simple adjustments. A built in makeready light, 14 inch capacity magazine and delivery, improved mechanical features and simplified oiling all contribute to the "Efficiency *plus* Versatility" of the new Kluge "AP" (All-Purpose) Press.

The KLUGE "AU" PRESS
(Automatic Unit)



The Kluge "AU" (Automatic Unit) Press is the press that put the Kluge reputation for efficiency and versatility in the highly respected position it occupies today. This is the press that has lead the platen into more profitable fields of work with its "Rigid Impression", "Selec-Tone" distribution, "Quick Getaway" and many other exclusive features. The efficiency and versatility of the Kluge "AU" (Automatic Unit) Press is exceeded only by the new Kluge "AP" (All-Purpose) Press.

The KLUGE 4-roller "AU" PRESS
(Automatic Unit)



This press is built for the printer whose work does not require the exceptional coverage afforded by the additional distributor rollers of the other models. Aside from this the 4 roller Kluge press has all the exclusive Kluge features such as Rigid Impression, Quick Getaway, Selec-Tone Distribution, etc.

There is a Kluge Press to fit the requirements of every shop.

MANUFACTURED BY **BRANDTJEN & KLUGE, INC.** SAINT PAUL, MINN.

BRANCHES IN BOSTON · NEW YORK · PHILADELPHIA · CHICAGO · ATLANTA · DETROIT
ST. LOUIS · SAN FRANCISCO · LOS ANGELES · MINNEAPOLIS · CANADA: SEARS, LIMITED

KLUGE "AP" Press Leads the TREND Toward

(All-purpose)

"Efficiency PLUS Versatility"

OF LATE years the constant search for efficiency has led to greater and greater specialization until recently most business men, including printers, have come to the realization that over-specialization is dangerous.

Lately many printers operating a Kluge Automatic Press have found that it is the one press that has been busy turning out a profit while other more expensive equipment has been idle. They have found the reason for this to be that the extreme versatility of the Kluge Automatic Press makes it possible to run all kinds of jobs on it.

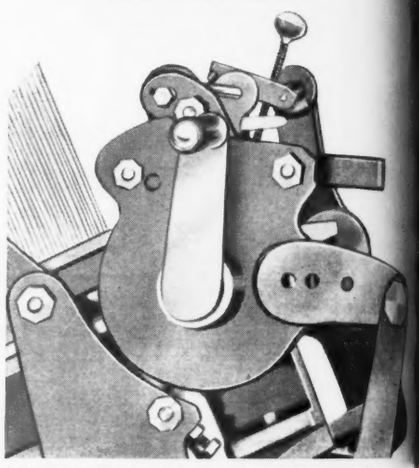
Realizing this trend toward Efficiency plus Versatility we have developed the New Kluge "AP" (All-purpose) Press which carries the Kluge reputation to greater heights.

The magazine capacity of this new press has been increased to 14 inches (3250 sheets of 20 lb. bond) equaling the delivery table capacity. The rate of feed of the magazine is easily adjusted to accommodate any weight of stock from onion skin to ¼ inch board. The magazine will accommodate irregular shapes such as died out envelopes, cartons, etc., through simple adjustments and without changing any parts. The magazine may also be easily adjusted to compensate for uneven stocks, such as tags, booklets, etc., in such a manner as to always keep the leading sheet at the proper angle for easy feeding.

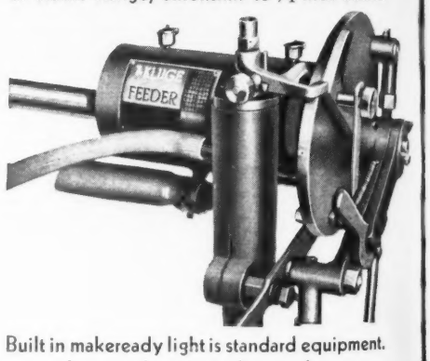
A built-in makeready light, as standard equipment, is another feature that adds greatly to the convenience and ease of operation of the press. Other improvements of a mechanical nature such as a more positive delivery arm action, simplified throwoff mechanism, easier oiling, double V belt drive, improved suction release valve, etc. still further increase the efficiency of the press. These improvements in design and construction make the new Kluge "AP" (All-purpose) Press the most versatile and efficient press ever produced.

Just as the Kluge Feeder led the way 20 years ago, the Kluge "AP" (All-purpose) Press leads the way today in the trend toward Efficiency *plus* Versatility.

Magazine capacity of 14 inches equals 3250 sheets of 20 lb. bond.



Magazine feed adjustment for various weights of stock. Range, onionskin to ¼ inch board.



Built in makeready light is standard equipment. Improved suction release valve.

MANUFACTURED BY **BRANDTJEN & KLUGE. INC.** SAINT PAUL, MINN.

BRANCHES IN BOSTON · NEW YORK · PHILADELPHIA CHICAGO · ATLANTA · DETROIT
ST. LOUIS · SAN FRANCISCO · LOS ANGELES · MINNEAPOLIS · CANADA: SEARS, LIMITED

This sheet printed on the 12x18 Kluge "AU" Press

Flintglo inks will give your printing extra power without extra cost.

Manufactured exclusively by

Howard Flint Ink Company

DETROIT CHICAGO NEW ORLEANS HOUSTON DENVER INDIANAPOLIS

This sheet is not varnished

Flintglo Yellow No. G-1800

Flintglo Red No. F-8173

Flintglo Blue No. F-8172

Flintglo Black No. F-8170

Flintglo inks shine with beautiful gloss; and also shine with perfect press performance.

Customers will welcome your suggesting this new and sure way to put power into printed advertising.

Each color was printed in only one impression—at production speed

Every Flint Ink Is a Good Ink

Have you seen *the*

KELLY CLIPPER?

Enclosed is a press sheet from this revolutionary press

American Type Founders

Our Latest . . . Our Greatest

SALES BRANCHES

ATLANTA, GEORGIA	223 Nelson St., S. W.
BALTIMORE, MD.	109 S. Hanover Street
BOSTON, MASS.	470 Atlantic Avenue
BUFFALO, NEW YORK	327 Washington Street
CHICAGO, ILLINOIS	519 W. Monroe Street
CINCINNATI, OHIO	6th and Sycamore Streets
CLEVELAND, OHIO	1231 Superior Avenue
DALLAS, TEXAS	600 South Akard Street
DENVER, COLORADO	1351 Stout Street
DES MOINES, IOWA	924 Grand Avenue
DETROIT, MICHIGAN	557 W. Larned Street
KANSAS CITY, MO.	934 Wyandotte Street
LOS ANGELES, CAL.	222 S. Los Angeles Street
MILWAUKEE, WIS.	737 N. Van Buren Street
MINNEAPOLIS, MINN.	421 Fourth St., South
NEW YORK, N. Y.	104 E. 25th Street
PHILADELPHIA, PA.	13th and Cherry Streets
PITTSBURGH, PA.	405 Penn Avenue
PORTLAND, OREGON	416 S. W. Oak Street
ST. LOUIS, MISSOURI	2135 Pine Street
SAN FRANCISCO, CAL.	500 Howard Street
SEATTLE, WASH.	Western Ave. & Columbia
WASHINGTON, D. C.	1224 H Street, N. W.

AMERICAN TYPE FOUNDERS

200 ELMORA AVENUE • ELIZABETH, NEW JERSEY

Descendant of

The Famous KELLYS

The Kelly Clipper is a revolutionary press . . . just as the first Kelly press was, 24 years ago. In 1914 a new era of profitable production began for printers who changed to Kellys. In 1939 printers will have the same opportunity in a 14x20½ inch sheet size range with the Kelly Clipper!

Proud to present

AMERICAN TYPE FOUNDERS

Kelly CLIPPER

Smashing all Records for
Easy Operation…Speed…Quality

Our Latest…Our Greatest

PRESSMEN

Gave it their okay

Thousands of pressmen told us what they wanted in an ideal press.* The Kelly Clipper not only answers their demands, but it anticipates the need of modern printing for years to come. The Clipper has been proved and tested for more than two years under commercial conditions.

*ATF Ideal Press Contest—September 15th to October 24th, 1938.

With the features

PRESSMEN ASK

For the first time a printing press has been produced along the lines de
the men who operate them. The Kelly Clipper offers advantages to th
and owner never before obtainable in the 14x20½ inch delivered sheet

● ***Adjustable Drop-guides*** for accurate control of register. On the Clipper. these can be moved for delicate register changes without moving the form. Sheets are completely visible at drop- and side-guides.

● ***Easy Access to Cylinder*** appealed to a majority of pressmen because it means faster makeready . . . more time for running the job. And their work is easier

● ***Positive Delivery*** is w
of the pressmen wanted. Po
of the sheet from the time
release it . . . until it reaches

SKED FOR

lines demanded by
es to the pressman
ed sheet size range.

Easiest Press to Operate

"Easier, simple operation" was demanded by more than 90% of the pressmen. Owners back up this demand because it means increased production, less waste, less lost time. Features shown prove that the Kelly Clipper is not only simple, easy to operate, but it also offers additional features to cut production costs and increase quality.

elivery is what over 87% wanted. Positive control om the time the grippers il it reaches the delivery.

● ***Stream Feeder*** the answer to thousands of pressmen wanting a "quick-set feeder." Suction and blast control of sheet in full view. Sheets are spaced to reach guides at about one-fourth press speed.

● ***Easy Access to Cylinder*** appealed to a majority of pressmen because it means faster makeready . . . more time for running the job. And their work is easier

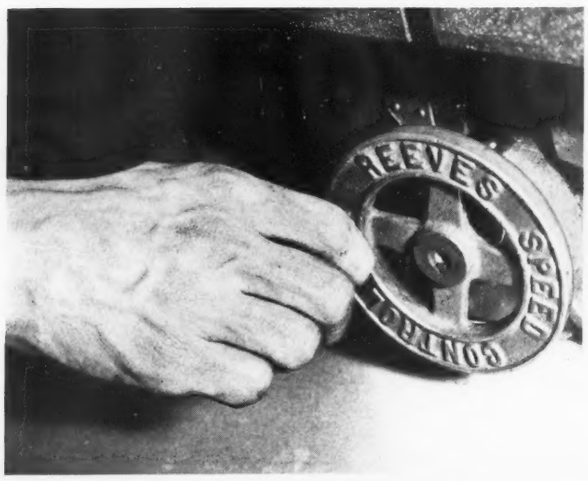
● ***Positive Delivery*** is
of the pressmen wanted. F
of the sheet from the tim
release it . . . until it reache

SPECIFICAT

Largest Sheet	
Smallest Sheet	
Inside Chase Size	
Type Bed Size	17
Complete Roller Coverage	
Lightest Stock	
Heaviest Stock	(4-pl
Feeder Capacity	
Delivery Capacity	
Speed Range	
Floor Space (open)	4 ft.x
Floor Space (closed)	4 ft.x
Horsepower to Drive (1 motor)	
Net Weight	

Motored by Kimble

● ***Easy Roller Setting*** from standing position outside the press helps simplify the pressman's job before getting under way . . . full sight and accuracy saves him time after the run is started. Minor adjustments can be made while press is running.



● ***Handwheel Speed Control***
nates stopping press to change spe
find correct "step." Delicate speed cha
can be made while the Clipper is ru
by simply turning this handwheel.

AMERIC

elivery is what over 87% n wanted. Positive control om the time the grippers til it reaches the delivery.

ICATIONS

	~~14-20½~~ inches
. . .	3¼x5½ inches
. . .	14¾x21 inches
. .	17¾x22⅜ inches
ge . . .	12½ inches
. . . .	Onionskin
. . (4-ply)	.018 inches
. . . . .	15 inches
. . . . .	14 inches
. . . . .	.3000-5000
. . 4 ft.x8 ft. 4 inches	
. . 4 ft.x6 ft. 6 inches	
motor)	.3
. . . .	4460 pounds

by Kimble

Control elimi- change speed or ate speed changes lipper is running andwheel.

CLIPPER *Advantages*

In addition to the features shown here . . . the *Versatility* of the Kelly Clipper means high-speed production on black and white work, as well as the finest quality printing on four-color process jobs. The Clipper takes a wide variety of popular stocks and sizes in form, stationery and advertising printing. *Low upkeep* on the Clipper is a big factor in its favor. Built to last a lifetime to precision standards, you can depend on it for day-in and day-out production. *ATF Service* by trained, skilled mechanics is available at your nearest ATF Branch.

This isn't nearly the entire story of the Kelly Clipper, by far! Find out about the other money-making features of this revolutionary press. Ask your ATF Salesman for complete details, or mail the enclosed card . . . Today.

RICAN TYPE FOUNDERS

This press sheet printed on the Kelly Clipper
Types used: Onyx, Bodoni, Kaufmann Script

C&G Saw Trimmers

SAWLINER

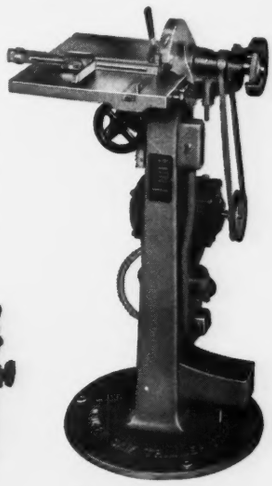
THE ACME of perfection built into a low priced saw. The Sawliner has a wide range with its large table and 72 Pica Gauge. It is priced so that every shop can now afford a saw and to permit the purchase of several as auxiliary saws in the larger commercial plants and for use in ad alleys in the larger newspaper offices. Furnished as bench machine, cabinet model or portable on wheels. Also ideal for engraving plants.

Standard equipment includes motor, 72 Pica Gauge with finger tip control, safe positive work holder and one Trimsteel Saw Blade. The new C&G Trimsteel Saw Blade cuts slugs and metal so smoothly and clean that trimmer knives are not required on the average work. The Sawliner may also be equipped with the famous C&G Universal Blade.

C&G Sawliner

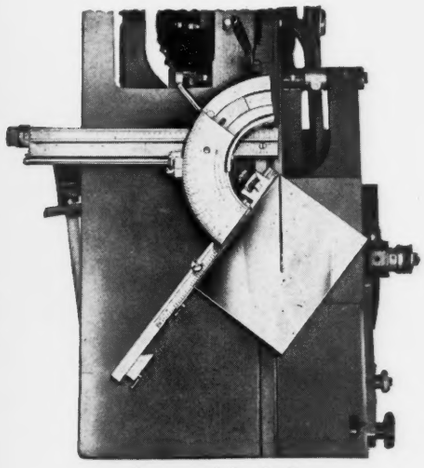
Model 2

For many years the No. 2 C&G Saw Trimmer has brought efficiency and profit to thousands of composing rooms. It has been said repeatedly that the No. 2 is the fastest slug saw ever offered to the trade. During these years fundamental principles in machine design have made the No. 2 C&G a leader in productivity, safety, accuracy and economy. All of these features were built into the original C&G saw trimmer and the reputation of careful manufacture has been guarded jealously. Over a period of years changes and refinements in this machine have been few, because compositors in their use of the No. 2 found it extremely satisfactory in every way. Recommended as an all purpose saw for the intermediate plants and as a utility machine in plants equipped with larger saws.



No. 2 Saw Trimmer

No. 3-A Saw Trimmer



Improved Angle Gauge

Where possible wear might effect cut, trim and miter on C & G saw trimmers, adequate provisions have been made to take care of these adjustments.

C & G saw trimmers make no compromise with accuracy and safety. They are constructed of longest wearing materials, and all working parts are safely guarded.

Model 3-A

The Saw Trimmer that will out perform all others on the market. Recommended for the better plants requiring one good saw trimmer and for the larger plants needing a battery of heavy duty saw trimmers. The large 18 by 30 inch table and balanced raising and lowering mechanism for saw arbor facilitates easy handling of cuts. Slugs and strip material sawed readily from 9 points to 135 picas. This space too limited to describe its many outstanding features demanding your attention. See it demonstrated or write for further details. No job too large or too small to be handled efficiently with the Model 3-A.

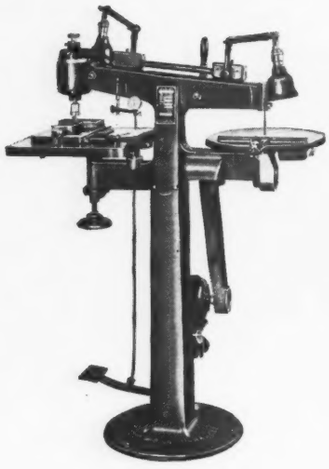
C&G Angle Gauge

Has a wider range and more flexible than any similar device. The C&G Angle Gauge is an attachment for the Model 3-A Saw and with it the scope of the Model 3-A has been broadened. A full range of angles from 2 to 90 degrees can be sawed with slugs, strip material and base. Unsurpassed for sawing wedges to block in angle boxes and base material for blocking.

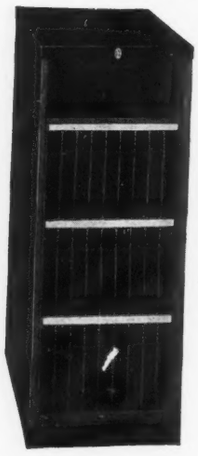
MILWAUKEE SAW TRIMMER CORPORATION

612 EAST CLYBOURN STREET • MILWAUKEE, WISCONSIN

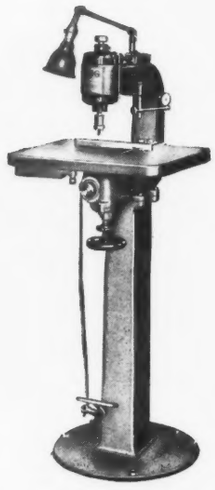
Other C&G Composing Room Equipment



Router and Type High



No. 22 Strip Material Cabinet



Router, Jigsaw and Type High

C&G Jigsaw, Router and Typehigh Machine

A complete machine for routing and jigsaw operations facilitating the preparation of cuts for the press in your own composing room. Costly delays for corrections, changing key numbers, mortising, routing high spots and finishing cuts to exact type-high are eliminated with this unique machine.

List of users includes some of the finest plants in the country. Write for detailed information and list of users in your vicinity.

C&G Router and Typehigh Machine

Identical to the router end of the C&G Router, Jigsaw and Type High Machine. Built for those who have little use for a jigsaw, yet continually need a router. However, if even a moderate amount of mortising and irregular cutting is required the combination machine should be purchased.

No. 20 Waste Receptacle

No. 21 Waste Receptacle

C&G Strip Material Cabinet

Something every saw trimmer owner can use to advantage. Speeds up production; places strip material where it belongs. It is substantially built of sheet steel and holds over 1200 pounds of metal. The partitions are 24½ inches deep to accommodate full length strips. The height is just right to be used as a work table along side any saw trimmer and the opening at top can be used for tools, and accessories, or additional strip and basing material.

C&G Waste Receptacles

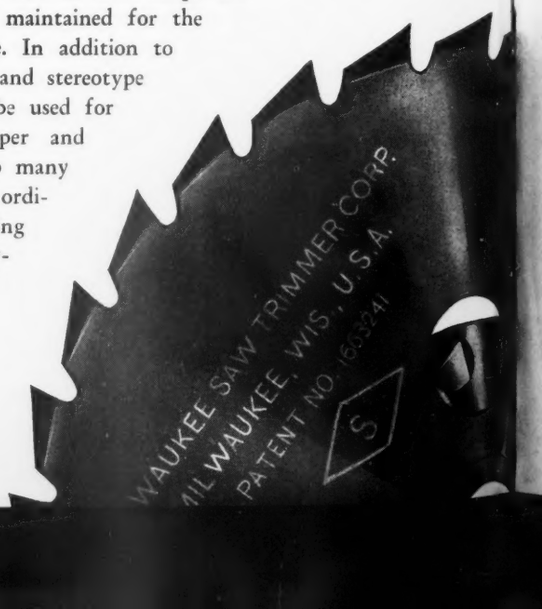
Waste Receptacles keep floors clean and save metal. A low cost item with big value. Made of heavy sheet steel to stand long wear. Handle raises to convenient height for transporting. No. 20 has a capacity of 1467 cubic inches and is regular equipment with the C&G Model 3-A Saw Trimmer. No. 21 is larger for general use and has a capacity of 2000 cubic inches. Either can be furnished with rubber wheels.

C&G Universal Saw Blades

A patented blade made from high speed tool steel and designed especially for use on C&G Saw Trimmers. C&G equipment includes a saw grinding attachment for sharpening the Universal Blades right on the saw. Removing the blade, sharpening and placing it back on the saw takes less than five minutes time.

C&G Universal Saw Blades may be used on other saw trimmers but give most efficiency when used on C&G Saws and sharpened with the C&G Saw Grinder.

The patent covers the special forming of the thirty teeth, and due to their shape the side clearance is maintained for the life of the blade. In addition to cutting linotype and stereotype metal they can be used for zinc, brass, copper and wood. Stay sharp many times longer than ordinary blades resulting in substantial savings over a period of time.



Sept. 16. 1939

THE NEW YORKER

Price 15 cents

THE NEW YORKER, and its printers, THE CONDE NAST PRESS, have always maintained the highest standards of printing craftsmanship. THE NEW YORKER, like 200 other national magazines, is printed with IPI inks.

INTERNATIONAL PRINTING INK
DIVISION OF INTERCHEMICAL CORPORATION
75 VARICK STREET · NEW YORK CITY

Keeping in Touch

CAL. TO CONN.—No, "Cal. to Conn." isn't one of the volumes in the ENCYCLOPEDIA BRITANNICA. It's just our way of telling you that magazines from coast to coast, from California to Connecticut are being printed with IPI Vaporin inks.

To take up the Conn. first: THE NEW YORKER is printed with IPI inks at the Conde Nast Press in Greenwich, Conn., where 21 other magazines of national importance are also being printed with Vaporin and with other IPI ink. Vaporin's instant-drying properties have won much favor with printers in the three years since it was first introduced.

Way out West towards the setting sun, the SUNSET magazine is a Vaporin customer. This is one of the oldest magazines on the Pacific Coast, but it is produced by the most up-to-the-minute methods at the Coast Printing Corporation, in Palo Alto. We know the 250,000 readers of SUNSET appreciate the clean, sharp printing which Vaporin helps to make possible. And printers appreciate the fact that these finer printing results are achieved at much faster press speeds.

Now that we have carried Vaporin from "Conn. to Cal.," we might call attention to the fact in an article in this issue of PRINTING EQUIPMENT ENGINEER there is a description of how one of the largest publishing groups in the country uses Vaporin. Its publications are among 200 magazines in between Greenwich, Conn., and Palo Alto, Cal., that are Vaporin-printed. That doesn't count the millions of pamphlets, brochures, catalogs, paper bags, packages, and labels which have been produced with Vaporin. New Vaporin formulations are being developed all the time. Have you investigated recently the possibilities Vaporin offers your plants? Why not call the IPI representative about it today?

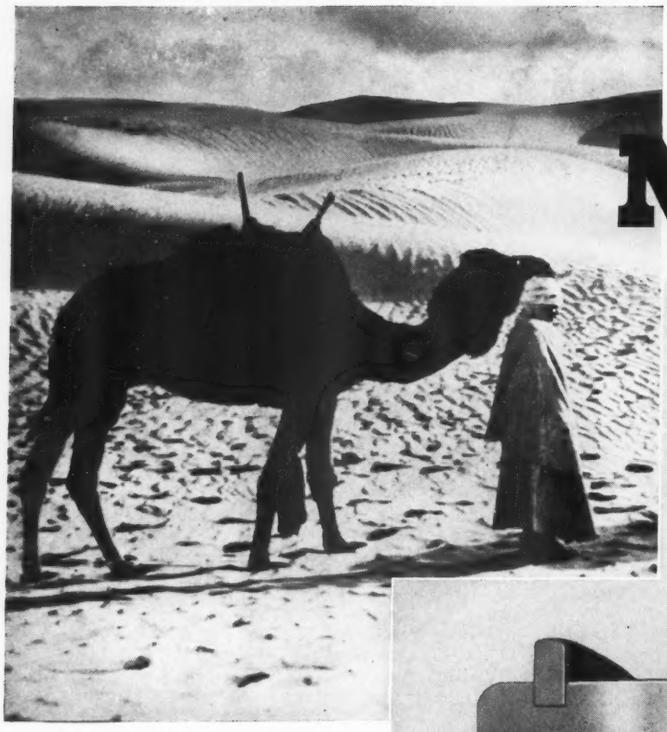
CONVENTION DAZE—The World's Largest collection of printers and printing supply men will be assembled in New York between September 24 and October 3, when no less than nine important organizations connected with the Graphic Arts will convene in this World's Fair city. Most of the visitors will see the Fifth National Graphic Arts Exposition at the Grand Central Palace. When you go to this tremendous show, don't fail to drop in at the Ink Association exhibit! Features there include a color movie on ink making, chairs to relieve the load on tired feet, and hostesses. No one will try to sell you a pound of ink, since the exhibit is a cooperative venture with all ink manufacturers contributing to its support. Therefore, no individual horns can be tooted. Of course, if you'd like details on some particular brand, just drop us a line and we'd be glad to furnish full information.

The new broadcasting code bars matrimonial bureau advertising via the radio. Too bad. With television coming in, they could really display the products to advantage.

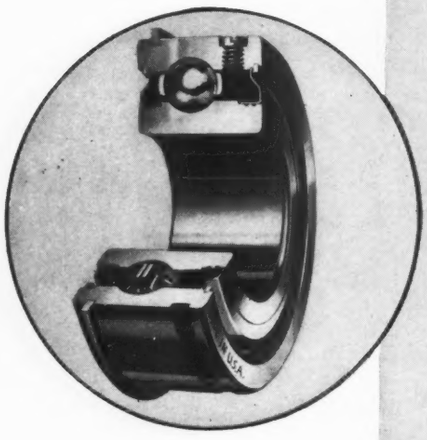
CANADIAN NEWS—From one of our correspondents in the land of the maple leaf, we have received an excellent example of how gloss inks may be used in place of an overprint varnish. The job is a brochure done for the De Laval Company, Limited, with a solid blue cover, over-printed with red. Both the blue and the red have a brilliant gloss, and the effect is one that should make Dominion printers proud of their craftsmanship. As you may have suspected, IPI Glo-Ray gloss inks were used. In the United States or Canada, or for that matter, in New Zealand, IPI Glo-Ray inks can help you achieve beautiful gloss printing effects. The next time you have some labels or a brochure which you want to make particularly attractive, try Glo-Ray inks!

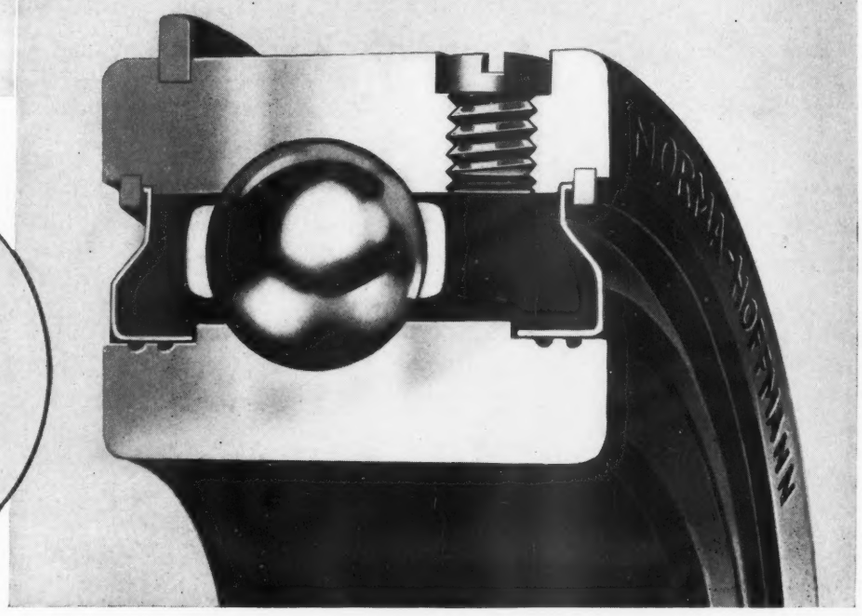
INTERNATIONAL PRINTING INK
DIVISION OF INTERCHEMICAL CORPORATION
DEPT. P. E. S., 75 VARICK STREET · NEW YORK CITY

ipi



NO *Fear of* GOING DRY!





What water means to the camel, lubricant means to a bearing—LIFE ITSELF. And, like the camel, the "CARTRIDGE" BALL BEARING carries within itself its own EXTRA RESERVE SUPPLY, ample for a long period.

In the cross-section herewith, note how its DOUBLE-ROW WIDTH GIVES THE "CARTRIDGE" BEARING DOUBLE THE GREASE CAPACITY of a single-row type. Note also how the in-built metal seals confine the grease WITHIN THE BEARING ITSELF, providing abundant lubrication to the raceways and rotating elements at all times.

The "CARTRIDGE" BALL BEARING is equipped with close-fitting, wearless metal shields which, with recessed inner ring construction and two or more grease grooves, form a truly effective labyrinth through which THE GREASE CANNOT PASS AND DIRT CANNOT ENTER.

Adopt the "CARTRIDGE" BALL BEARING—as your insurance against neglected lubrication, and dirt and grease contamination. It is handled as an integrally sealed unit, unencumbered by any supplementary closure parts. It provides easier and quicker assembly and disassembly. It stays clean before mounting, during assembly, or when removed, and has convenient regreasing and inspection features. Without additional closures, the "CARTRIDGE" BEARING seal is highly effective regardless of the position of the motor or the unit.

Write for the Catalog. Let our engineers work with you.

NORMA-HOFFMANN BEARINGS CORPORATION, STAMFORD, CONN., U. S. A.

2 Star Performers

Blatchford METAL

★

Made to meet a Quality Standard and *not* to match a price . . . serviced for perfect performance and continuous satisfaction . . . BLATCHFORD METAL is always reliable. And because of its reliability, it actually is . . . *the cheapest metal you can buy.*

Blatchford BASE

★

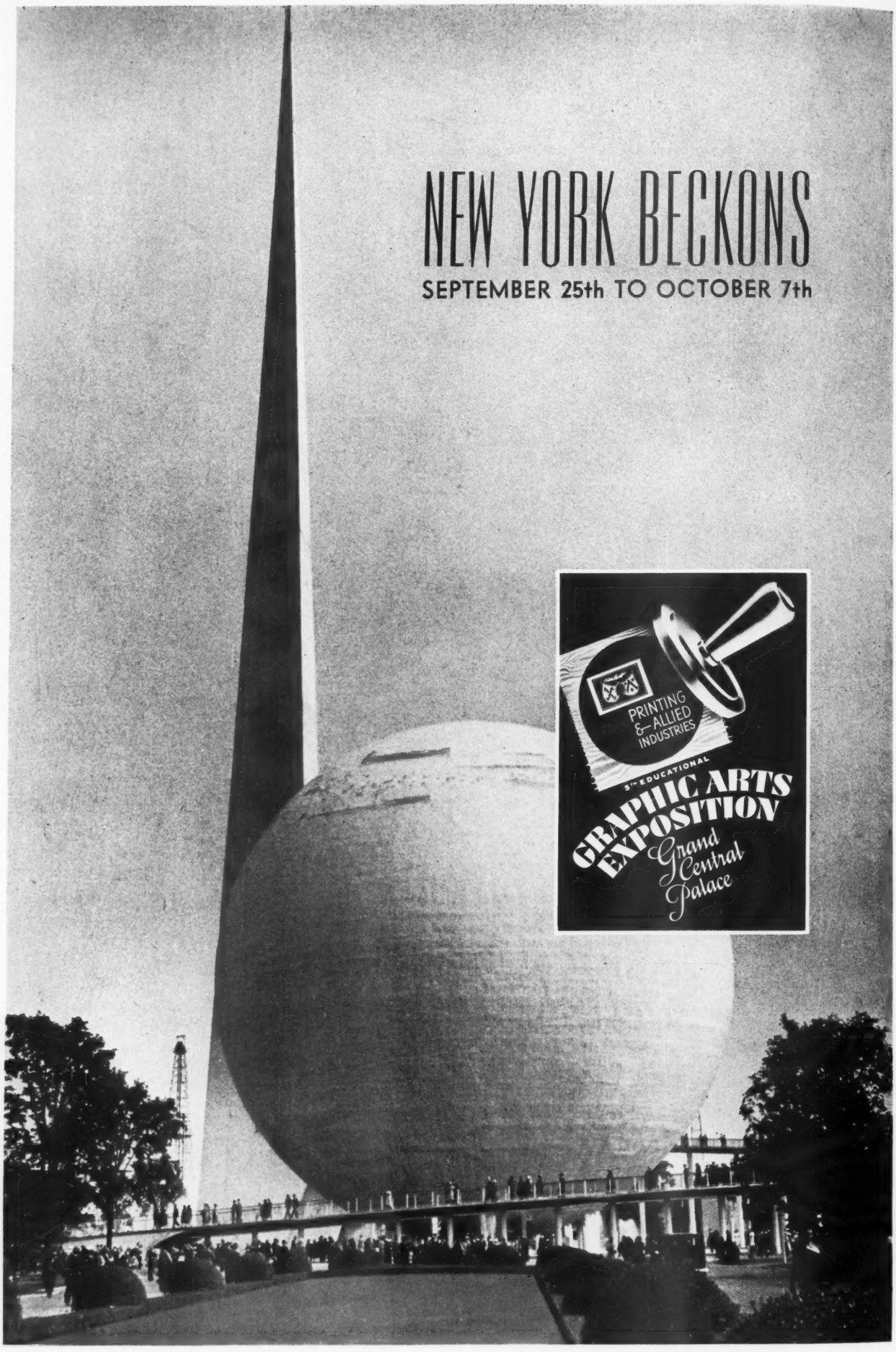
"Experience Tested" on all classes of printing and under every conceivable condition of production . . . BLATCHFORD BASE offers exclusive practical features essential for complete satisfaction. It is a star performer because it handles any and every job.

E. W. BLATCHFORD CO.

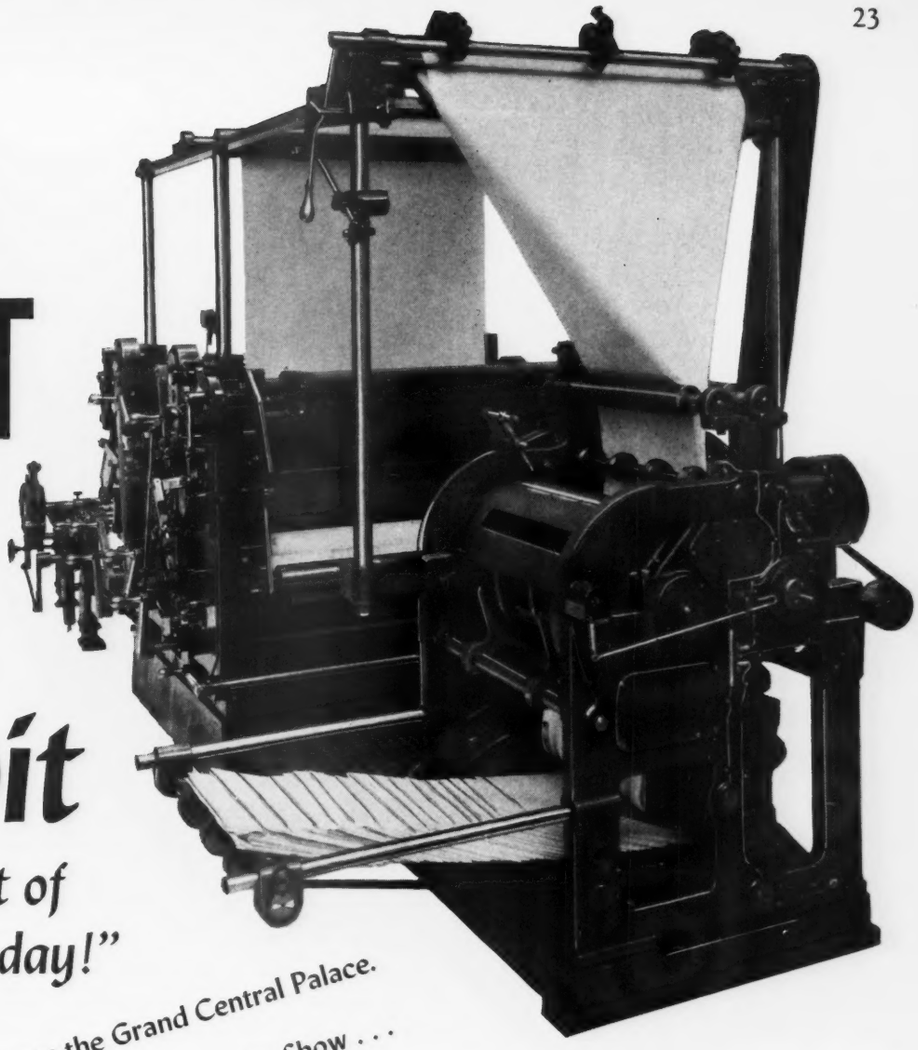
BRANCH OF NATIONAL LEAD CO.

NEW YORK—63 Park Row

900 West 18th Street—CHICAGO


NEW YORK BECKONS
SEPTEMBER 25th TO OCTOBER 7th
PRINTING & ALLIED INDUSTRIES
5TH EDUCATIONAL
GRAPHIC ARTS EXPOSITION
Grand Central Palace

TURN RIGHT



for ATF's *Exhibit*

of "Equipment of Tomorrow...Today!"

Turn right as you come into the Grand Central Palace. You can't miss it! The largest display at the Show . . . 6000 square feet of space of spectacular interest to the lithographer. See the new ATF Camera, Plate Whirler, Vacuum Frame . . . like no other offset equipment you have ever seen before • Watch the sensational Webendorfer offset newspaper press produce an 8-page tabloid newspaper at 14,000 an hour. Inspect ATF's complete modern dark room for the Offset Plant of Tomorrow.

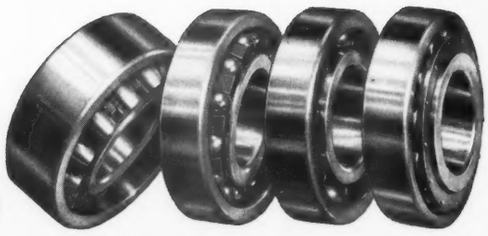
● *You are cordially invited to make ATF's exhibit your headquarters at the Show . . . meet your friends there.*

TURN RIGHT for ➡

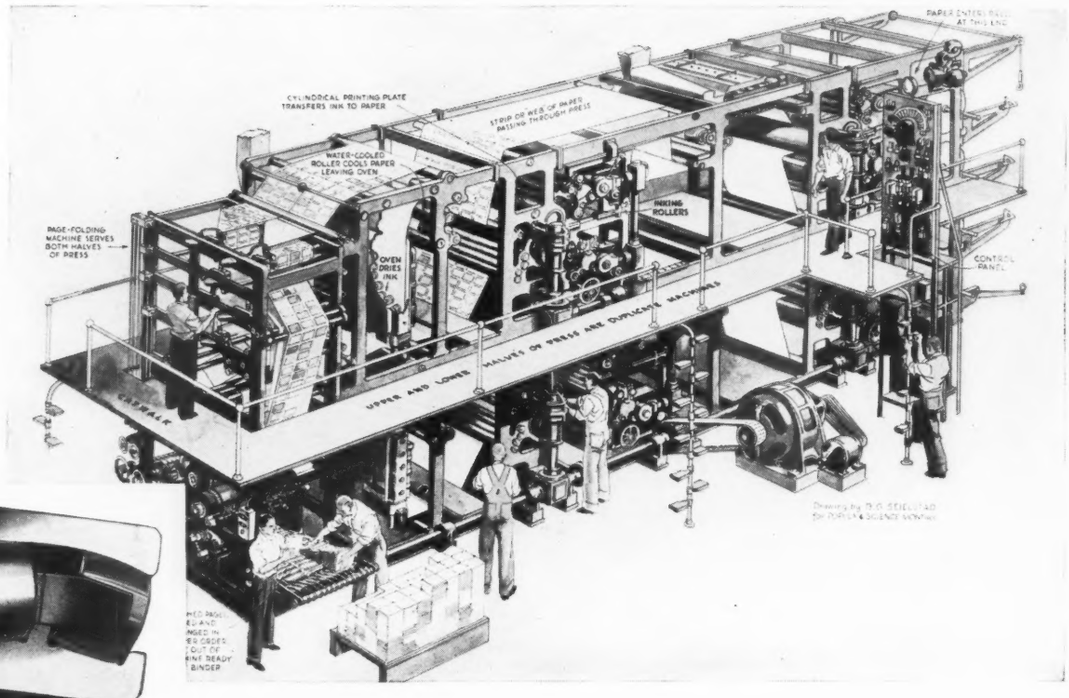
American Type Founders

Branches and Selling Agents in Principal Cities • Offset Division: Mount Vernon, New York

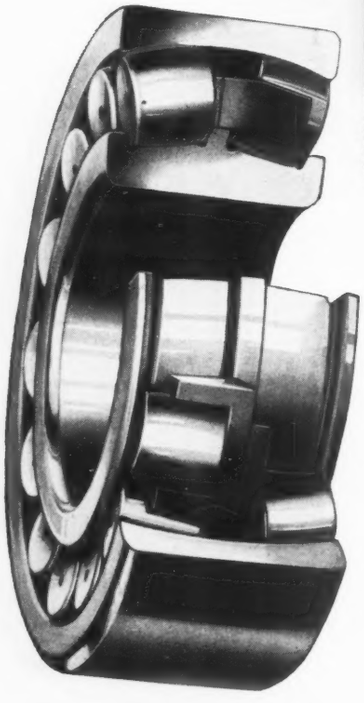
Types used: Lydian Family and Franklin Gothic Extra Condensed



PRINTING 2,000,000 PAGES IN TWO COLORS PER HOUR ON SKF BALL AND ROLLER BEARINGS


CYLINDRICAL PRINTING PLATE TRANSFERS INK TO PAPER
STRIP OR WEB OF PAPER PASSING THROUGH PRESS
WATER-COOLED ROLLER COOLS PAPER LEAVING OVEN
PAGE-FOLDING MACHINE SERVES BOTH HALVES OF PRESS
OVEN DRIES INK
INKING ROLLERS
CONTROL PANEL
UPPER AND LOWER HALVES OF PRESS ARE DUPLICATE MACHINES
CATWALK

● *Experts of The Goss Printing Press Company labored for more than half a year designing and building this press which is approximately one-fifth of a block long and more than one story high.*



VITAL ROTATING PARTS OF THE BIGGEST AND FASTEST TWO-COLOR MAGAZINE PRESS IN THE WORLD RUN ON SKF'S

● The biggest and fastest two-color magazine press in the world follows the progress of the biggest and fastest machines in other fields of industry by depending upon SKF Bearings for reliability and high speeds. For dependable bearings are essential when approximately 200 feet of paper nearly five feet wide runs through this press at one time, and is turned into more than 2,000,000 6¾″ x 9½″ pages every hour.

The Goss Printing Press Company has used SKF for years, so it was no mere chance they selected SKF Bearings for vital rotating parts of this press. They know that every SKF self-aligning bearing is built like a finely-jewelled watch to permit shaft deflections without binding . . . to assure accurate register and impressions through axial and radial cylinder rigidity . . . to insure low friction that means a low starting torque and a quick pick-up. Near you an SKF representative is ready to key more than 3000 bearing types and sizes to your individual needs. See him today.

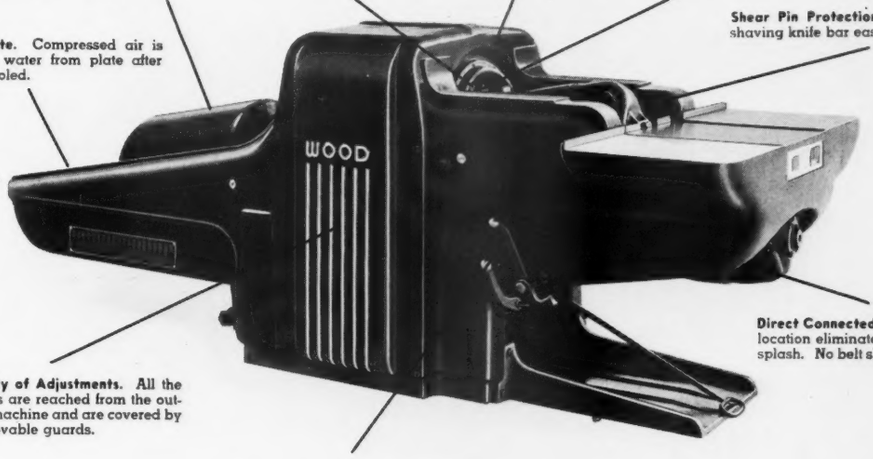
4400

SKF

Ball and Roller Bearings

SKF INDUSTRIES, INC., FRONT ST. & ERIE AVE., PHILA., PA.

Built to "Take it"



Cleaning Face of Plate. Compressed air is used to blow sawdust from face of plate as it enters the arch.

Double Cooling. Both outside and inside of plates are cooled through independently adjusted water supply.

Drying of Plate. Compressed air is used to blow water from plate after it has been cooled.

Accessibility of Adjustments. All the adjustments are reached from the outside of the machine and are covered by easily removable guards.

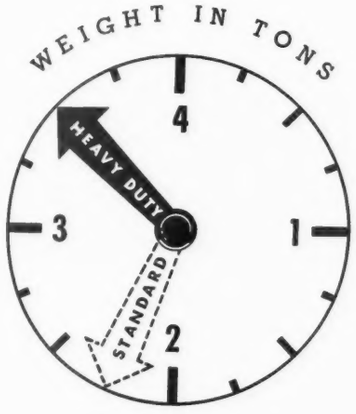
Two Revolutions. Plates may be shaved the second time without removal from arch. This is very advantageous on open-ad plates.

One-piece Frame. Main frame and arch made in one rugged casting, insuring accurate location of the arch.

Two Shaving Knives. Both roughing and finishing cuts are used in the shaving of each plate.

Shear Pin Protection. Shear pin on shaving knife bar easily accessible.

Direct Connected Motor Drive. Motor location eliminates danger from water splash. No belt slip and no chain slap.



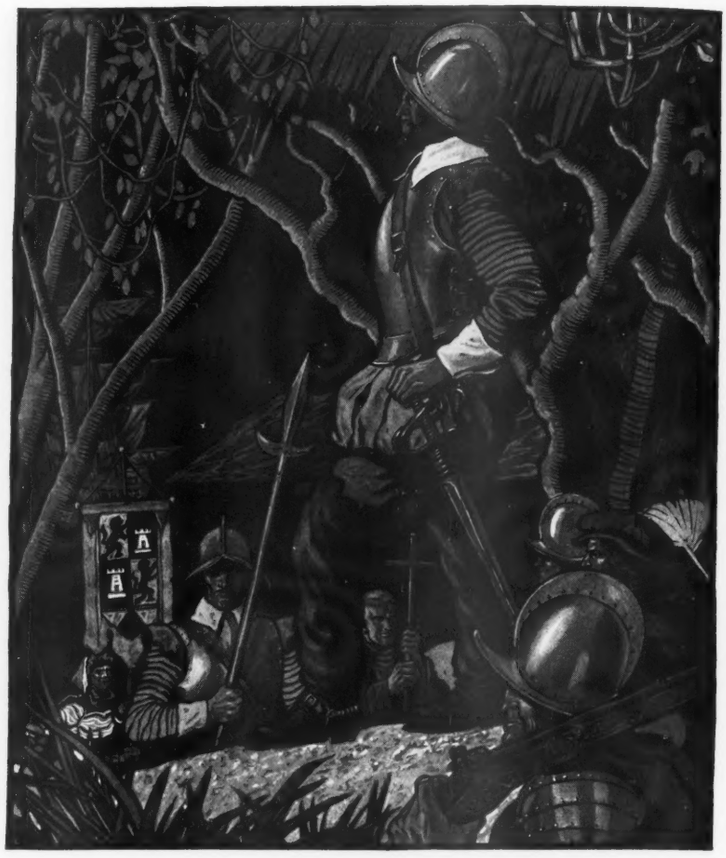
1¼ TONS EXTRA WEIGHT

The above diagram shows the relative weights of the Standard and Heavy-Duty Autoshavers. Note that the heavy-duty machine weighs 3½ tons, as compared with 2¼ tons for the Standard Autoshaver.

The Wood Heavy-Duty Autoshaver is designed for the handling of stereotype plates on a mass production basis. Because of its extra-heavy construction (it weighs considerably over a ton more than the Standard Autoshaver), this new heavy-duty machine will stand up under the most severe service; and its use insures better printing plates and, therefore, better presswork. The Heavy-Duty Autoshaver has the same over-all dimensions as the Standard Autoshaver, and can be installed in the same location, with no rearrangement of stereotype room equipment. Printed matter will be furnished on request.

WOOD NEWSPAPER MACHINERY CORPORATION

PLAINFIELD, NEW JERSEY — **NEW YORK OFFICE: 501 FIFTH AVENUE**



PONCE DE LEÓN Sought the Fountain of Youth

—so that he might enjoy a long life!

IDEAL ROLLERS have been developed to the point where they have not only a *long* life—but a *lively* one!

IDEAL O-X PROCESS ROLLERS for rotary and letter presses have a base which is guaranteed for years and a surface which is renewable at low cost whenever fresh surfaces are needed for particularly fine, exacting jobs. *O-X base rollers will not harden!*

IDEAL LITHOGRAPHIC AND TYPOGRAPHIC ROLLERS give satisfactory service for an average of over three years, according to a recent survey made by a national trade publication, and quality is their chief characteristic.

GRAPHIC ROLLERS are guaranteed not to melt, and yet they retain their soft, pliable surface throughout their life.

IDEAL DX NEWSPAPER ROLLERS not only have an unusually long life but require less frequent regrindings than others. Time after time, DX Rollers have pepped-up halftone pages to give them real snap and vigor.

Rollers for special printing processes—rotogravure, aniline, coating, varnishing and gluing—all have been developed by Ideal to give the longest possible service and at the same time maintain the high quality of work produced.

Write and acquaint us with your requirements, and learn the latest developments toward fulfilling your needs.

IDEAL ROLLER & MANUFACTURING CO.

CHICAGO, ILLINOIS *Branches in the principal cities* LONG ISLAND CITY, NEW YORK

SPECIFY

CLINE-WESTINGHOUSE

MOTOR AND CONTROL

for

Type Printing Presses

Offset Presses

Rotogravure Presses

Color Presses

and

Auxiliary Equipment

USED IN THE BEST ENGINEERED PLANTS

●

THE CLINE SYSTEM ALSO INCLUDES

Unit Press Drive and Control
Double Motor Drive and Control
Magazine Type Single Motor Control
Rotogravure and Color Press Control
Stereotype Motor Equipment
Electrotype Motor Equipment
Engraving Motor Equipment
Cline Reels and Automatic Electric Tension
Cline High Speed Pasters
Typesetting Drives

Tell Us Your Problems — Our Engineers Have the Experience and Facilities to Serve

CLINE ELECTRIC MFG. CO.

NEW YORK • CHICAGO • SAN FRANCISCO

CLINE • WESTINGHOUSE

Margach Manufacturing Co., Inc.

82 BEEKMAN ST., N. Y. C.

•

We Manufacture

"The" MARGACH FEEDER

For Linotype, Intertype, Monotype,
Ludlow and Elrod Machines

•

LINO SLUG ROUTER

•

MIEHLE VERTICAL AUTOMATIC STOP

•

JONES INK AGITATORS

for all types of fountains on Letter Press
Offset Press and Lithograph Press

•

**SURE GRIP WORKHOLDERS AND
RAPID SAW GAUGES
For Miller Saws**

•

We represent

**The Milwaukee Saw Trimmer Co.'s full line of
C. & G. Saws, Routers and Jig Saws**

•

**The Partlow Corporation's Gas and Electric
Controls for Metal Pots**

•

And in affiliation with Payne & Walsh Corporation
we can assist in equipping the modern printing
plant with new and used machinery
to your complete satisfaction.

Power and Speed for the NEW Crowell Plant

FROM TURBINE ROOM THROUGH PRESS ROOMS, THE MAJORITY OF ELECTRIC EQUIPMENT IS GENERAL ELECTRIC

CROWELL-COLLIER Publishing Company at Springfield, Ohio, ranks as a leader in the magazine publishing field. In attaining and holding this place with the leaders it relies upon one of the best-equipped and best-organized publishing plants in the world.

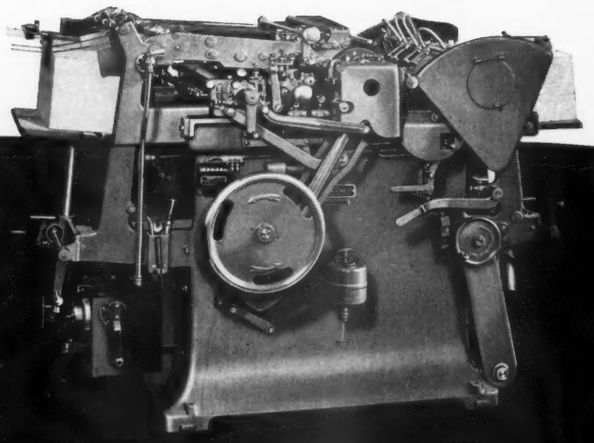
To perfect its facilities in recent modernization moves, Crowell selected General Electric drives and control for the majority of its new and recent magazine presses.

To the reliability and low maintenance of its G-E turbine-generator, and G-E distribution equipment, Crowell thus adds the precision, speed, and flexible modern control for its latest-type production equipment.

For any type of press-machinery, or plant electric equipment—for the generation, distribution, or application of electric equipment, refer to General Electric, Schenectady, N. Y., or to the G-E office near you for complete service in selecting modern electric equipment for the printing plant.

GENERAL ELECTRIC

011-550



12 X 18 CYLINDER PRESS—A larger size of the popular C & P Cylinder heretofore available only in 11 x 15 size. Provides greatly increased capacity.

YOU WILL PROFIT

BY STUDYING THIS NEW CHANDLER & PRICE EQUIPMENT SHOWN FOR THE FIRST TIME

AT THE *Graphic Arts Exposition*

Coming off the Chandler & Price production lines are three new machines that will be introduced at the Graphic Arts Exposition. They are:

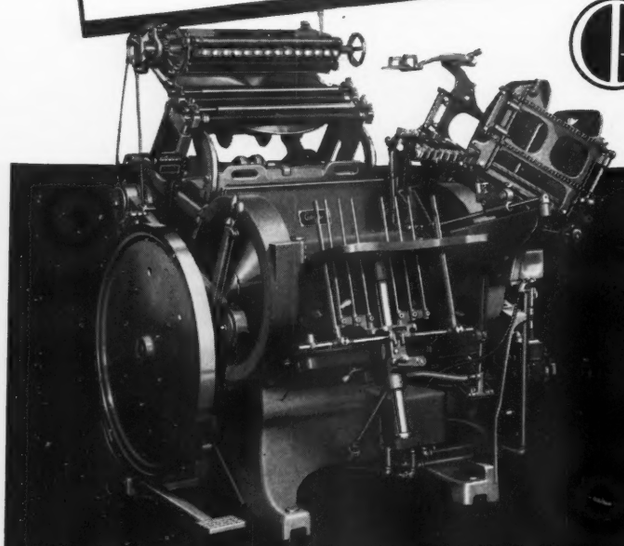
- **14½ X 22 CRAFTSMAN HEAVY DUTY PRESS** *with Impression Control*
- **12 X 18 CYLINDER PRESS**
- **34½-INCH NEW CRAFTSMAN CUTTER**

You will want to study each of these units in detail—to learn first hand all the advantages that have been incorporated in each and to realize personally how they can increase production and profits in your plant. We'll be expecting you at the Chandler & Price display.

- *If you do not attend the exposition, write for complete details of this new equipment.*

THE CHANDLER & PRICE CO. • CLEVELAND, OHIO
NEW YORK—Grand Central Palace—480 Lexington Ave.
CHICAGO—Transportation Bldg.—608 S. Dearborn St.

Coast-to-Coast Sales and Service through nearly half-a-hundred offices of American Type Founders and other dealers.



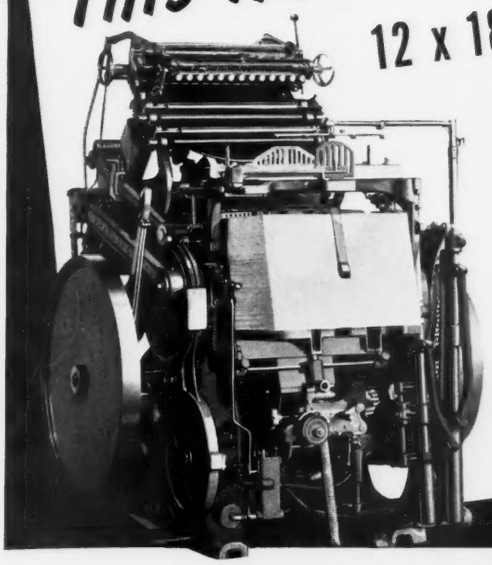
14½ X 22 CRAFTSMAN HEAVY DUTY PRESS WITH IMPRESSION CONTROL and continuous feeding attachment. The only automatic press that does fine quality printing and also does die-cutting, creasing, embossing, etc. Impression is controlled with mechanical accuracy without touching the packing on platen—a new feature on this press.

34½-INCH NEW CRAFTSMAN CUTTER—Chandler & Price Craftsman Cutters have made a name for themselves wherever used. This 34½-inch unit has been redesigned to include all the most recent improvements of C & P cutters.

AND FOR YOUR INSPECTION

This Additional C & P Equipment

12 x 18 CRAFTSMAN AUTOMATIC UNIT

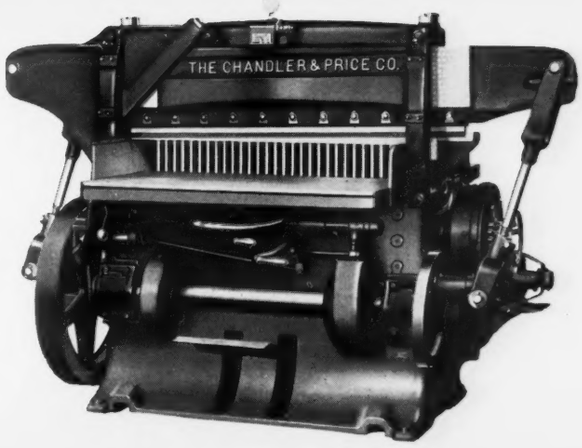


This C & P Press revolutionizes all former practices of makeready. Platen screws are eliminated and impression adjustments made quickly and accurately by handwheels that control the bed. Great impressional strength and accuracy of impression are secured throughout the life of the press by combining platen and rocker in a one-piece casting.

The modern C & P Automatic feeder handles any stock from onion skin to heavy board. Adjustments to any size sheet can be quickly made. This Craftsman is a profit maker in any plant. Also built in 10 x 15 size.

C&P AUTOMATIC CUTTERS—50"·44"·39"

Every feature of C & P automatic cutters is designed to produce and keep producing accuracy in cutting. We begin first with a one-piece base casting to provide a substantial foundation. All working parts are bolted to this base. Cutting table is substantially ribbed to eliminate warping and wearing. When set, the back gauge is locked immovably in position. The knife is *pulled*—not pushed—through the stock. The cutter cannot repeat. All cutter controls are within easy reach; a sliding panel keeps trimmings out of knife slot; the back gauge is split into three sections for convenience in trimming pamphlets, etc., to three dimensions at a single stroke of the knife. Brake is self adjusting and motor mounted below cutting table out of the way where oil cannot drip on the stock.



C&P LEVER CUTTERS

Chandler & Price equipment also includes cutters for the small plant—26½ inch Craftsman Cutter and the C & P Bench Cutter. Both of these cutters have accurate scales, and are built to the same precision standards including cutting accuracy, rigidity and dependability of Chandler & Price cutters of larger size.

THE CHANDLER & PRICE COMPANY

6000 CARNEGIE AVENUE · CLEVELAND, OHIO

MILES of SMILES!

The most contented railroad passenger is the one made most comfortable. Timken Roller Bearings effect comfort for the traveling public such as it never before experienced.

The most contented railroad executive is the one who sees operating costs decline—volume increase. Timken Bearings effect economies, maintain schedules, eliminate hot boxes and old time troubles as never before. This is definitely proven by the highly efficient performance of Timken Roller Bearings, now on most of America's newest streamliners and latest locomotives.

That means Miles of Smiles for everyone.

The soundest dollar for dollar investment the American railroads can make is to equip all rolling stock, old and new—passenger cars, locomotives and freights—with Timken Bearings. Costs come down tremendously—volume shoots up—vastly improved all around operation is the gratifying result. Miles of Smiles for everyone!

NOTICE
Look for the trademark TIMKEN on every bearing, whether buying new equipment, or replacing a Timken Bearing in your automobile, or truck, industrial or farm machinery. That trademark is your assurance of quality.

TIMKEN
RAILWAY ROLLER BEARINGS

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

This advertisement appears in The Saturday Evening Post for September 9th. Miles of Smiles for every manufacturer and user of Timken Bearing Equipped products.

Coming Closer

Letterpress Equipment . . . in 36 x 48 size . . . possessing new factors of high efficiency aimed directly at the heart of the printers' sales problem. . . . Designed and made by the world's largest exclusive manufacturer of cylinder presses.

FINAL ANNOUNCEMENT • NEXT MONTH

ONE-THIRD *of all your Machine Errors can be* ELIMINATED

ERRORS in machine composition are an important cost item in every composing room. The cost includes not only machine time but also the time of operators, floor men, and others concerned in the handling of proofs and corrections.

Most machine errors are mechanical—*i.e.*, transpositions, missing letters, double letters, and wrong letters—and are therefore preventable through the use of Matrix Contrast Service. By making all such errors visible at a glance, this service results in cleaner proofs and substantial savings of time. The actual average reduction of errors effected is ONE-THIRD—and this means one-third of *all* machine errors. In other words, the reduction of purely mechanical errors amounts to *more* than one-third—enough more to make an over-all saving in excess of thirty-three and one-third per cent.

Write for specific information and names of users in your vicinity.

MATRIX CONTRAST CORPORATION

Sole Licensees of the Percy L. Hill Matrix Contrast Patents Nos. 1,466,437 and 1,796,023

EMPIRE STATE BUILDING, NEW YORK

European Agents: Fuditor, Ltd., 3, Woodbridge Street, Cleckenwell Green, London, E. C. 1

Black & White
MATRIX CONTRAST SERVICE

The Fifth

Educational Graphic Arts

Exposition

THE Fifth Educational Graphic Arts Exposition will be opened formally by Hon. A. E. Giegengack at 2 o'clock, Monday afternoon, September 25, at Grand Central Palace, New York. It has been announced that the exposition doors will open at 1 o'clock each afternoon and that the exposition will be in continuous operation until 11 p.m. In order to give exhibitors a "breathing space," however, the exposition will not be open Sunday, October 1. The exposition runs through September 25 to October 7.

Because some of the exhibitors are planning a "surprise" showing of new machines and are reluctant to have any advance announcement made, it is impossible at this time to present a completely detailed program of what is to be shown. Below is printed the list of exhibitors at this writing who will present the greatest exposition in the history of our industry. Nearly 50,000 sq. ft. of display space is devoted to the exposition.

Exposition Manager Fred W. Hoch estimates that attendance will be at least 100,000 printing executives and others interested in the printing industry. As a nucleus, there are the delegates and visitors to the important printing trade conventions which will be held in New York during exposition days. Principally, these are:

International Association of Printing House Craftsmen
United Typothetae of America
National Printing Equipment Association, International Printers Supply Salesmen's Guild
National Association of Photo-Lithographers
Advertising Typographers Association of America
Printers National Association, International Trade Composition Association
Book Manufacturers Institute
Direct Mail Advertising Association
Graphic Arts Association Executives
Young Executives of the Graphic Arts

There will be printers not connected with any of the Associations in convention, as well as visitors from other lands.

When the visitor enters the Grand Central Palace he will be impressed with the striking decorative scheme which sets forth the displays. Giant murals will depict the greatness of the Graphic Arts Industry, huge white signs will give statistical proof of its magnitude. Seals of all the States and Territories as well as of the Canadian Provinces, draped in flags, will demonstrate the wide scope of the exposition. Walls and giant columns will be draped with the exposition colors of maroon and buff.

Action will be the keynote of the exposition; for at least 75% of the displays will feature machinery in motion—the latest devices for the most modern lithographic and letterpress production, modern bindery equipment; in fact, machinery, devices and gadgets for every department of the complete plant, even the business office.

In charge of the millions of dollars worth of the finest equipment manufactured in America which will be shown, will be hundreds of key representatives of the manufacturers prepared to answer all questions and to prove their answers by demonstrations on their machines. Grand Central Palace, during the two weeks of the exposition will be the printing center of the world.

Not only will the great displays of the larger exhibitors feature new and striking developments in their machines and products, but even the smallest booths will have plenty to offer the plant owner or executive on the lookout for ways to improve efficiency. Since the exposition is an educational non-profit enterprise, the management was able to restrict exhibitors to companies which had something interesting and valuable

to show. Small units of space were made available for companies whose product really deserved representation and who would have had trouble in financing an elaborate display.

An exhibit which will attract a large audience will be the Stephen H. Horgan Collection of Photo-Mechanical Prints. Mr. Horgan, recognized throughout the world as the dean of photoengraving, will be in personal charge of the exhibit which will include some priceless specimens of the photoengraving art never before displayed.

Efforts are being made to have the Stephen Daye Press, the first press to produce printing in the American Colonies, on display. There is not a person in the industry who will not welcome the opportunity to see this historic hand press which was the forerunner of the marvelous machines which have made our industry what it is today.

In view of the issuance by the United States Government of the special 3-cent postage stamp commemorating 300 years of printing progress in this country, the Stephen Daye Press, which forms the design for the stamp, is of unusual interest at this time. A special postal sub-station has been authorized for the main floor of the exposition where the commemorative stamps may be purchased.

Exhibitors as of August 24, 1939 for Fifth Educational Graphic Arts Exposition

Acco Products, Inc.
Acme Printing Ink Co.
Allen & Wilson
American Pressman
American Printer
American Steel Chase Co.
American Type Founders Sales Corp.
American Wood Type Mfg. Company
Arteo Printing Ink Corp.
Associated Ink Company, Ltd.
August, Charles Corp.
Baum, Russell Ernest
Binders Board Manufacturers
Bingham's, Sam'l Son Mfg. Co.
Bingham Bros. Co.
Binks Manufacturing Co.
Blatchford, E. W. Co.
Bookbinding & Book Production
Boston Wire Stitcher Company
Braden-Sutphin Ink Co.
Brasnell Company
Brandtjen & Kluge, Inc.
Bunn, B. H. Co.
Burgess Ink Co., Inc.
California Ink Co., The
Camden Ink & Color Co.
Canada Printing Ink Co.
Carlson, Frank P. Company, Inc.
Carmichael Printing Ink Co.
Centre Trucking Company, Inc.
Challenge Machinery Co.
Chandler & Price Co.
Christensen Machine Company
Cline Electric Manufacturing Co.
Commercial Investment Trust, Inc.
Consolidated Printing Ink Co.
Cottrell, C. B. & Sons
Craftsman Line-up Table Corp.
Craftint Manufacturing Co.
Crescent Ink & Color Co. of Pa.
Crowe Printing Ink Co.
Daw, A. J. Printing Ink Co.
Davidson Manufacturing Corp.
Dayton Rubber Mfg. Co.
De Vilbiss Company
Dexter Folder Co.
Disston, Henry & Sons
Driscoll, Martin & Co.
Duex Engineering Products
Eagleston, Arthur W. & Co.
Eastern Manufacturing Company
Eastern Roller Manufacturers Group
Economy Printers Products Company
Embossograph Process Co., Inc.
Faust, Rudolph
Federated Metals
Flint, Howard Ink Co.
Forbes Ink Co.
Force, Wm. A. & Company, Inc.
Fuller Machine Company
Gaetjens, Berger & Wirth, Inc.
Gegenheimer, William, Inc.
General Printing Ink Corp.
Godfrey Roller Co.
Graphic Arts Ink Corp.
Graphic Arts Monthly
Great Western Printing Ink Co.
Hamilton Manufacturing Co.
Hammond Machinery Builders, Inc.
Hampton-Auld, Inc.
Harrigan Roller Company
Harris Seybold Potter Co.
H. H. Heinrich, Inc.
Hellmuth, Charles Printing Ink Co.
Hill-Hentschel Co.
Hilto-Hawley Co.
Hoe, R. & Co., Inc.
Hoeffler, J. & Co.
Huber, J. M., Inc.
Imperial Type Metal Company
Ineo Co.
Inland Printer
Int'l Business Machines Corp.
Intertype Corporation
International Printing Ink Corp.
Kassel, E. F.
Kelly, Joseph F., Inc.
Kelly Metal Corporation
Kidder Press Co., Inc.
Kienle & Co.
Kimble Electric Company
Kohl & Madden Printing Ink Co.
Krug Electric Company
Lanston Monotype Machine Company
Latex Fibre Industries, Inc.
Leber, Ralph Co., Inc.
Lester & Wasley Company, Inc.
Levey, Frederick H., Co.
Linotype Parts Company
Lucy, Josh
Ludlow Typograph Company
Macbeth Arc Lamp Co.
Macbeth Daylighting Co., Inc.
Maigne, O. J. Co.
Margach Manufacturing Co.
Mergenthaler Linotype Co.
Miehle Printing Press & Mfg. Co.
Miller Printing Machinery Co.
Morrison Printing Ink Co.
McCutcheon Bros. & Quality
National Roller Co.
National Assn. of Printing Ink Makers
New England Editor & Printer
New Era Manufacturing Co.
Nu-Method Sales Corporation
Osgood-Globe Corp.
Paasche Airbrush Co.
Pacific Printing Ink Co.
Payne & Walsh Corporation
Potdevin Machine Co., Inc.
Prescott, H. S.
Prentiss, Geo. W. & Co.
Printing Equipment Engineer
Printing Machinery Co.
Printing News
Printing Trades Blue Book
Production Year Book
Pyramid Printing Ink Corp.
Rapid Roller Co.
Reporter with Postage & Mailbag
Rich & McLean, Inc.
Richards, J. A. Company
Roberts Numbering Machine Co.
Rosback, F. P. Company
Rouse, H. B. & Company
Roberts, Lewis, Inc.
Roosen, H. D. Co.
Roth, Carl E. & Co.
Royal Bronze Ink Co.
Rutherford Machinery Company
Ryan, Daniel J. Co., Inc.
Schwarm & Jacobus Co.
Siebold, J. H. & G. B.
Sinclair-Valentine Company
Sleight Metallic Ink Co.
Standard Ink & Color Co.
St. Regis Paper Company
Steel City Printing Ink Co.
Stereotype Equipment Company
Superior Printing Ink Co.
Suydam, M. B. Co.
Taylor Machine Co.
Texas Printing Ink Co.
Thomas, Charles B. Co.
Thomson-National Press Co.
Thompson Cabinet Company
Tompkins Printing Equipment Company
Triangle Ink & Color Co.
United American Metals Corp.
Vandercook & Sons, Inc.
Vavra-Frey Ink Co.
Verner, B. & Company
Walden Sons & Mott
Warren, S. D. Co.
Webendorfer-Wills Co., Inc.
Weber, Martin J.
Wetter Numbering Machine Co.
Wilde & Stevens, Inc.
Williams, R. S. Co., Inc.
Winn, Bernard
Winn & Goodman
Winslow Ink Co.
Wood, Nathan & Virkus Company, Inc.
Yale & Towne Mfg. Company

Intertype Futura

Two additional Futura cuttings are announced by Intertype Corporation this month —12 point Bold with Oblique and 18 point Demibold with Oblique. In the square serif field a new weight has been added to the Cairo family, namely Cairo Heavy. The first of this new series is the 12 point size duplexed with Cairo Medium.

THIS PARAGRAPH is set in the 12 point size of Futura
12 Point Futura Bold with Oblique
Bold *with Oblique* 12345
ABC abcdefghij 123
ABC abcdefghij 123
18 Point Futura Demibold with Oblique
Paragraph set in 12 point Cairo Heavy 1234567890
12 Point Cairo Heavy

New Coated Paper Mill for Champion

A new $3,000,000 paper mill will be erected for The Champion Paper and Fibre Company on a site adjoining the company's present plant at Pasadena, near Houston, Texas. It will be the company's third manufacturing plant. In the new mill will be manufactured coated-on-the-machine papers for *Time* and *Life* magazines. The mill will also be used for making standard grades of coated papers for other purposes. Pine pulp will constitute a considerable portion of the stock. The bleached pulp will be sulphate (not sulphite). The product will be a stout bleached kraft coated in the machine in roll form for large-scale magazine production.

The Fourdrinier paper machine to be installed in the new mill will have a wire width of 214 in., will be 115 ft. long and will trim 198 in. Overall length of what is claimed to be the world's largest combination paper-making and paper-coating machine will be approx. 400 ft. The machine will have four coaters and can be operated at 1500 ft. per min.

The 30 ft. high supercalender stacks will have ten rolls, 194 in. width, and can be operated at 2000 ft. per min. A new type of refrigeration will take care of heat dissipation. Each calender stack will be provided with a 10 T. ice-making machine.

The new building will be of brick and steel construction, two stories high, with three-story finishing room and three-story storage capacity.

It is announced that Champion will commence building operations at an early date and it is expected to have the new plant in operation in about ten months.

Triumph Equipment Engineers

It has been announced by D. M. Moore that Triumph Equipment Engineers is the name under which Triumph printing equipment and Stereo-Master stereotype equipment will be manufactured and offered to the trade. Northwest Type Foundry will continue in the printers' supply line and will also handle the Triumph line as retail agent. Patents and patented trade marks on stereotype and other equipment for the United States and foreign countries are owned by Triumph. As a part of an agreement, Northwest Type Foundry can use the patents on a royalty basis.

Why the Equipment Maker Wants You to Attend the Exposition

(Grand Central Terminal, New York, Sept. 25-Oct. 7)

THE equipment manufacturer knows full well that unless he contributes to the advancement of the printing industry by developing new and improved processes and mechanisms, the printing industry cannot prosper. It is an old law of Nature that nothing—man, plant life nor the seasons can stand still. To exist, they must advance. This law applies to man-made Printing Art. Rather than let competitive processes or methods dominate and eventually subjugate the Art, the manufacturer prefers that the industry advance by designing equipment with which man can maintain printing's leadership among all industries.

The printing equipment manufacturer is so completely tied up with printing production that he is vitally interested in the state of the printing industry. He is dependent upon the printing industry for his livelihood. The fortunes of the industry—good or bad—are his. He rises or falls with it.

The interests of the printing executive and the manufacturer in one respect at least, are mutual. The printing executive is constantly subject to the inexorable law of obsolescence—of method as well as of machinery. To survive, the printing executive must be prepared to produce today's printing at the least possible cost. He cannot produce today's printing at yesterday's prices. Nor has he the magical power to change yesterday's equipment to suit today's printing production requirements. He must have modern machinery in addition to skilled craftsmen with which to produce printing at a profit. Nature plays no favorites except to permit the survival of the fittest. Printing executives, too, know full well that unless their business methods and equipment are up-to-date they cannot survive.

The mutual interests of manufacturer and printing executive are entirely obvious. For that reason, the printing equipment manufacturer is standing right behind the printing executive with modern equipment.

This explains the manufacturer's interest in exhibiting his latest equipment at the National Graphic Arts Exposition. He wishes to accelerate your consciousness of the need for modern equipment to offset the damaging effects of obsolescent thinking, obsolescent machinery and of competitive methods and processes.

To provide a means for exhibiting their newest machinery and devices to the greatest number, the manufacturers have assembled their products in the Grand Central Palace this year. We believe your attendance at the exposition will intensify in you the feeling that to prosper as an integral part of your industry you must investigate the means offered to do that very thing. The manufacturer takes pride in knowing that he is helping you maintain the printing industry's dominant position. Your motive for attending the Exposition and his in wanting you to attend could be no higher.

Announces Development of Seven Models of Light Typesetting Machines

Since announcement some time ago of the first Omega Light Typesetting Machine (light-typer), Gustave Bagge, inventor of the Omega system, announces development of seven models suitable for composing type matter either on sensitized film or paper for reproduction by letterpress or offset, in sizes from 6 pt. to 72 pt. for book, newspaper straight matter and display composition. Machines are obtainable on special order to specifications.

Light-typesetting may be executed on these machines with automatic differential letter or character spacing and with semi-automatic or automatic line justification, *i.e.*, the type characters are fully justified to even line length as is done in actually composing or casting evenly justified lines of metal type by a unit system.

Light-Typing is done in two ways, according to the machine model selected. The first of these is semi-automatic. The manuscript is first typed on an Omega Paper Typer to produce perfected copy on paper for the Light-Typing Machine. The lines in the copy are made equi-distant in length with proper spacing between the words in each line. After the perfected copy has been typed, it is then photo-composed on a film or sensitized paper in an Omega Light-Typer. The film is exposed in this method by direct light.

In the second method, justification is automatic—that is, only one copy is typed. The copy is typed to determine the width of spacing between the words to bring the line to its predetermined length or measure, and afterwards the film or sensitized paper is exposed automatically in the machine. In the machine having automatic justification, the film is exposed to indirect or reflected light.

Mr. Bagge states that type composition on the Omega machines is not limited to standard typewriter faces, since any selection of master plates bearing the particular type style wanted, can be furnished. Besides facilities for typing from the fonts on the master plate, it is possible to enlarge or reduce the point size of the composition from the same master plate by means of a focussing device within certain limitations.

The master plate consists of a negative film bearing the letter characters in a font. The film is mounted on a semi-circular or sectional transparent drum. When a key on the keyboard is depressed, the master plate is moved to present the proper letter character on the master plate to the camera shutter in exact alignment for exposure on the film or sensitized paper.

The camera portion in the rear of the device contains the film or sensitized paper. Devices are incorporated in the machines to produce typographically composed originals in four different forms for whatever method of printing is involved.

Omega Light-Typer No. 9 for producing composed type matter on paper or in film form for reproduction by letterpress or offset. Devices are incorporated in the machine to produce typographically composed originals in four different forms for whatever method of printing is involved. Operation of the keyboard is similar to that of the standard typewriter. The film or sensitized paper is carried in the camera portion back of the center panel. Type characters are carried on a curved master plate which is brought before the lens in proper position for exposure to the film. When a key is depressed the shutter is opened. Operation of this particular model is by direct light. The light source is carried in the shade in the upper central part of the square frame. Light rays shine down on a prism and are then directed through the master plate and into the lens at right angles. The machine carries two master plates. The one shown in the picture is not in use, the other master plate is not visible since it is positioned between the prism and the camera shutter.

According to model, the machine may be equipped either with page or roll film. Page size film runs from 3¼ in. by 4¼ in. to 14 in. by 18 in. Roll film sizes range from 3 in. to 18 in. wide.

In the illustration is shown the Omega Light-Typer No. 9 for producing either negative film or straight paper camera copy for letterpress or offset plate-making reproduction of type composition. Three fonts are carried on each master plate in combinations such as 6, 10 and 14 pt., 8, 10 and 12 pt., 14, 18 and 24 pt., or other point size combinations. With capitals and lower case in roman and italics, samll caps, figures, points, etc., each master plate carries 720 characters.

Master plates bearing the type characters are interchangeable from one composing unit to another.

The Omego Light-Typer is provided with a differential letter or character spacing device, *i.e.*, the carriage moves the exact width of each character being exposed.

The machine is equipped with a three-row keyboard, covering with its three or four shift keys, from 90 to 120 characters. Operation is similar to that of the standard typewriter keyboard.

The various instruments shown on the Omega Light-Typer No. 9 in the illustration are explained as follows:

Left panel: The word space signal below center in the panel is a white light which indicates the complete action of the regular spacebar (or key) on the keyboard of the machine. The two upper lights (red and green) in the left panel have relation to the word space and justification indicator in the right-hand panel.

Center panel: The line scale in the upper part of the panel indicates the exact space where the line is to start as well as indicating progressively how much of the line has been composed within the pica line-limit (width) on the film. The vertical gauge at the left side of the center panel indicates the starting of the vertical line space and the spacing progression of subsequent lines. At the right side of the center panel is positioned the check scale for the feeding of the vertical movement of the surface action by the line space key on the keyboard of the machine. Adjustment is made according to type size.

Right panel: The justification indicator shows the summary of the value of the word spacing in every line composed, *i.e.*, as the spaces between the words occur upon depressing the word space-bar, the indicator hand indicates accumulatively. Extending along the front edge of the keyboard are 12 keys, six keys in each of the right and left groups. The six keys in each group hold the corresponding number of word spacings desired, from 4 to 9 (4, 5, 6, 7, 8, and 9) either plus or minus adjustment of the individual word spacing in the line which is being composed to make it equi-distant, or of proper width of measure, with the other lines of composition.

Mr. Bagge may be reached care of the Omega Company, P. O. Box 1405, Cleveland, Ohio.

Gustave Bagge, inventor of the Omega Light Typesetting Machine System manipulates one of his models of (Fototyper No. 5A) photo-composing machines. This particular machine was constructed in 1928. In this model, the keys are arranged in semi-circular form.

Set up a P-Double-E Filing System in your desk so you can find equipment and supplies literature readily before you go in to see the Old Man.

Peter Dennerlein (left) Manufacturing Director, Crowell-Collier Publishing Company, Springfield, O., holds executive meeting. Commencing second from left to right are: G. John Morean, Preparatory Superintendent; A. H. Korn, Letterpress Superintendent; W. M. Devers, Gravure Superintendent, and M. C. Williams, General Superintendent.

A MILLION A DAY

By Peter Dennerlein*

PRINTING EXECUTIVES will understand that manufacturing millions of Crowell-Collier magazines calls for large-scale production methods under precise production control.

In principle, publication production in the large plant is the same as in the small printing plant—the only real difference is that in the case of a plant such as ours, there is more of it. Our manufacturing operations in Springfield are based on a five-day week. Every month we turn out 21,800,000 magazines for the readers of *Collier's*, *The American Magazine*, *Woman's Home Companion* and *The Country Home Magazine*. That means 1,000,000 magazines every working day. Here, for instance, are the July print orders:

Collier's (3,250,000 a week)	14,083,000
Woman's Home Companion	3,500,000
The American Magazine	2,500,000
The Country Home Magazine	1,800,000
Total	21,883,000

That is our job and in telling you something of how we go about doing it, I shall be talking to production and mechanical executives—not to the fellow who knows little, if anything, about printing processes. Although my story will not pretend to be complete, my space and your time being limited, I shall try to convey an impression of our unceasing efforts to produce these four publications by letterpress and rotogravure under *controlled* conditions, especially in reference to the printing elements.

PUBLICATION FROM TWO POINTS

The Crowell-Collier Publishing Company's executive and editorial offices are at 250 Park Avenue, New York, and its production plant is in Springfield, Ohio. All editorial, advertising and art copy and layouts are created in New York and are shipped by mail to Springfield. In other words, the complete copy and layout of each page as it is to appear in any of the Crowell-Collier publications are received at our production offices in Springfield where they are reproduced and printed.

United States mail, air express, air mail and the teletype system are all used in sending copy, page layouts, art work, and advertising plates to Springfield, and, in turn, in sending proofs to the New York offices for OK by the editorial, art and advertising offices. So finely adjusted have the two extremities of our organization become that no inconvenience or lost motion of any kind occurs to delay publication dates of the four magazines.

Approximately 2,800 people are employed in our Springfield printing plant, and in excess of 8,200 employees in other parts of the country, making a total of approximately 11,000 employees.

LETTERPRESS AND GRAVURE SIGNATURES COMBINED IN SAME ISSUE

This manufacturing story is really confined to Springfield, so let's get back on the job. As I have intimated, both letterpress and gravure are employed to print Crowell-Collier Publications. With respect to the two processes, we combine signatures printed by both processes in one publication, that is, our publications contain some signatures printed by letterpress and some by gravure. The exception is *The Country Home Magazine* the inside of which is printed entirely by gravure and bound in letterpress cover.

In binding the magazines, we deliberately insert letterpress signatures with those printed by gravure in the same issue. It is sometimes difficult to distinguish the pages printed by gravure from those printed by letterpress. Occasionally, however, the bold, free splashes of color peculiar to gravure printing help to detect the process by which the signature is printed. The large-area illustrations printed in monotone gravure are easily distinguishable because of the characteristics peculiar to gravure.

Speaking of the inability of the human eye to readily identify gravure printing on some of the pages in our publications, it is obvious, of course, that a magnifying glass will enable one to see the difference between letterpress and gravure. The peculiar saw-tooth appearance of the edges of gravure-printed type are readily apparent under the glass. Another means, although not always reliable, is to inspect highlight areas in monotone gravure pictures for the diamond-shaped dots.

LETTERPRESS OPERATIONS

Our letterpress printing element production, from composing room operations and type-casting on through the plate-making foundry, are in charge of Preparatory Superintendent, G. Jno. Morean, whose association with this organization extends over a 30-year period of time. Mr. Morean has made many contributions to letterpress refinement which are in regular use in our plant.

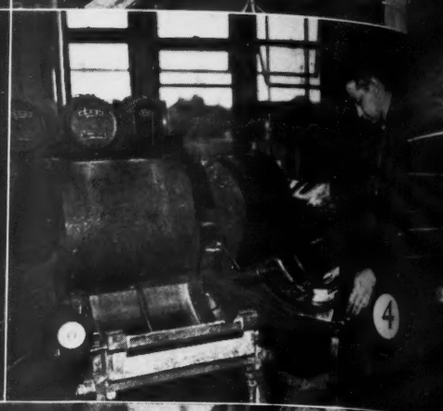
The *control* of the printing elements, my real text, commences in the composing room where type and line-slug composition are cast for the various publications. Composition is done on five Monotypes and five Linotypes. To exercise that control, the products of these machines are checked twice daily for dimensional accuracy, with micrometer gauges. If the type from any one machine is shown to be exceeding or does not equal the tolerances set for that particular body type, the machine is

shut down and is not started on production work again until the error has been corrected. Two important things are responsible for close watch over type measurements. The first of these is in body-wise measurement. It is evident that if the layout department in New York depends upon type matter being of a certain definite size and we do not maintain these definite sizes, the composed pages will not correspond to the number of lines allotted on the layouts. The second consideration is that in preparing the forms from which the electrotyping is done, it is essential that all form elements be of a certain definite height, within close tolerances. It is one thing to assume that all type is 0.918 in. high and another to maintain that type within 0.0005 in. plus or minus type high.

Letterpress Control Methods

Since all of our letterpress forms are molded by direct pressure for electrotyping it is necessary to mount all engravings on a substantial base which will withstand molding pressure. For this purpose we use solidified metal base cast from backing metal, *i.e.*, the base is subjected to 10,000 lbs. per sq. in. or 1,200 tons pressure in a direct pressure press to squeeze out all air bells. It is shaved afterwards to base height. All base metal is cut, and mortised if necessary, to suit the particular size of the cut.

The small tolerance differentials may seem inconsequential to some printing executives but when one is working under a precise system with many men involved, these little tolerances become highly important things. When it is known that those Crowell-Collier signatures which are printed letterpress are printed from hard oiled manilla packing, it will be seen that quality printing and press makeready and labor costs, to say nothing of chargeable idle press time, are factors which cannot be ignored.



1—Monotype Department *in plant of Crowell-Collier Publishing Company, Springfield, Ohio. Type is checked twice a day for accuracy. Type as small as 4½ pt. is set here for rotogravure reproduction.*

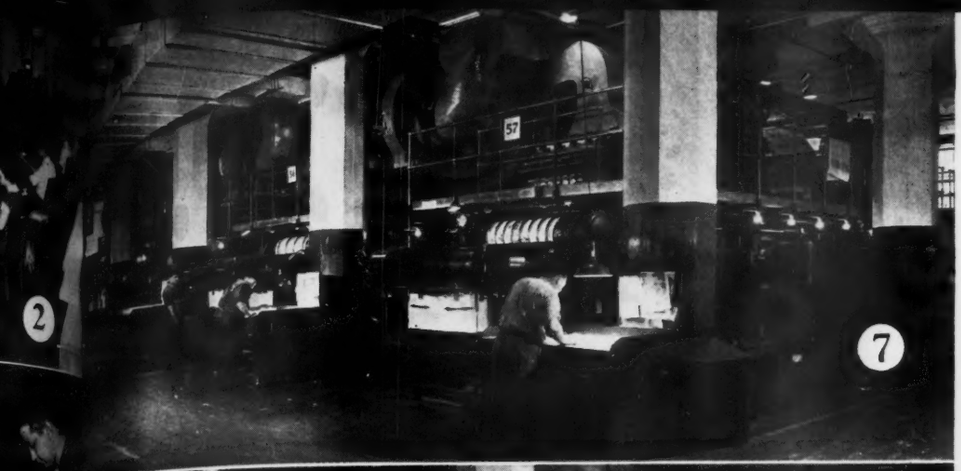
2—Line-Composing Machines *are used for editorial composition in several of the Crowell-Collier publications. Slugs also are checked twice a day to keep them within close dimension.*

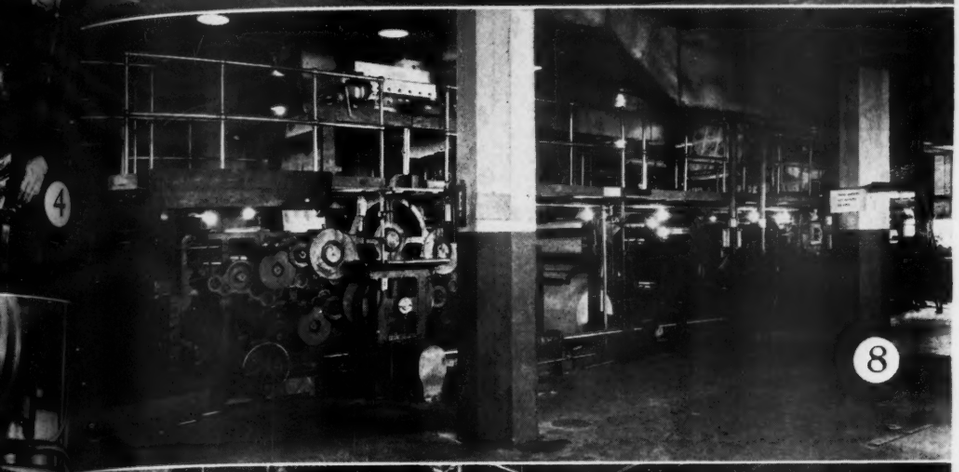
3—Electrotype Chase. *This magazine page is locked up ready for the electrotype department. Two bearers or guards are cast integrally in the chase. All of the bearers including the inside surfaces of the chase frame are machined for accuracy. Notice the direct pressure chase locking bars and screws.*

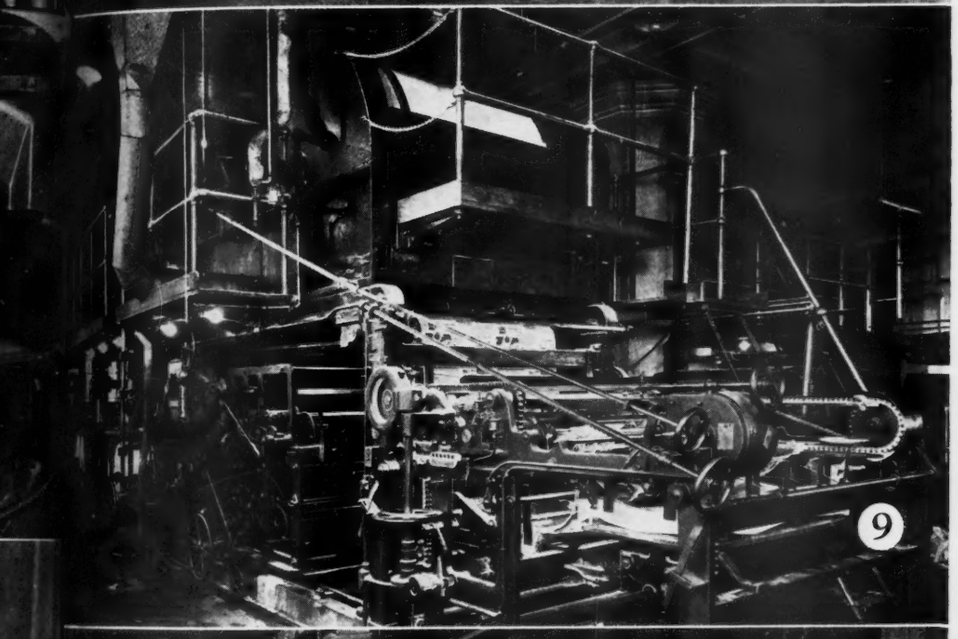
4—Casting Curved Plates. *Here the operator is brushing off a page electrotype shell preparatory to placing it in the Cottrell-Bryant casting box. The shell when locked in the box, will be of the same curvature as the box. It will be seen that plates are cast, solidified, trimmed and finished in curved form.*

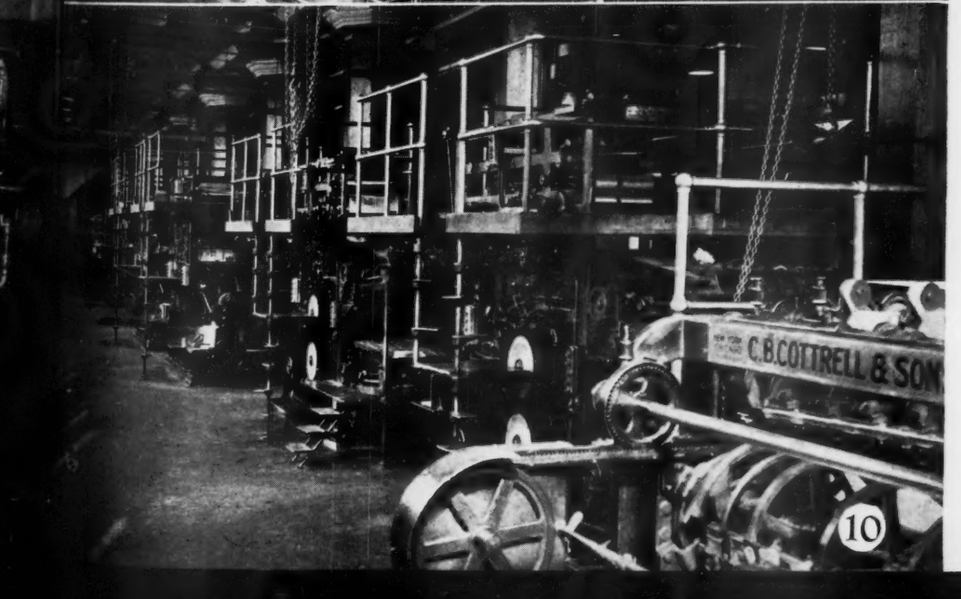
5—Relieving the Plate. *In some plates containing halftone areas, the highlights are relieved. Here the operator is placing a 0.003 in. thick paper overlay on the plate, so that when the plate has been subjected to hydraulic pressure the highlight halftone areas will not be as high as the solid areas. Lower highlight areas permit pressman to print plate beautifully without makeready.*

6—Plate Testing. *A special department is maintained for testing all plates before they are sent to the pressroom. In this department is operated an automatic self-inker miniature of a rotary printing press. Black and color plates are tested for printing element perfection, page size, surface level and color register. Press is operated by a pressman.*









Pages irrespective of their reproduction by letterpress or gravure are made up individually in electrotype chases.

In the case of type matter which is made up for gravure reproduction, the forms are locked up on a precision basis identically like the letterpress forms and are proofed as will be described later in this article.

In our minds, the gravure process is a precision process and all our copy is reproduced on that basis. Since, in gravure printing, the type elements are several steps removed from the original, perfect reproduction proofs of type matter are mandatory.

The chases used in our establishment have been made especially to assist in the control of both printing surface of the plate as well as its overall area. Bearers, or guards, are cast integral with the chase along the top and one side surface of the chase itself. Bearers for the other side and bottom of the page are inserted in the form previous to foundry lockup. We employ a "direct pressure" chase lockup means which consists of hexagon head screws threaded into the side and foot stick of each chase. A simple end wrench is used to manipulate the locking screws. We do not use quoins because their sliding action when locking up a chase contributes to distortion in the page dimension. The screws, however, do not cause the side and foot sticks or bars to slide inasmuch as their locking pressure is exerted directly against the page.

Cottrell-Bryant Plate Making System

THE Cottrell-Bryant process is used for making all 4-color letterpress plates in the plant of the Crowell-Collier Publishing Company. A great advantage of the process, in addition to its susceptibility for precise dimensional control of the plates, under rapid production conditions, is that the plates really are "cast" in the curved form in which they are to be used on the press, *i.e.*, the electrotype shell is fitted into the curved plate-casting box and the molten backing metal is poured to form the curved plate. Other features of the Cottrell-Bryant process are that the plates are "solidified" after the backing metal has been poured against the electrotype shell in a press under hydraulic pressure to squeeze out any air bells or spongy sections in the body of the plate; also, by fitting a paper mask 0.003 in. thick over certain sections of the printing surface of the plate containing an illustration and placing both mask and plate in a hydraulic forming machine to reduce the printing height of the highlight sections. In other words, roughly speaking, the highlight sections of the illustration in the plate are approximately 0.003 in. lower than the shadow or solid portions of the plate.

Molding Control

Our electrotyping department operates three shifts a day to supply the many black and color printing plates required for the Crowell-Collier publications. The present capacity of the department is 13,000 plates per month, about 600 a day.

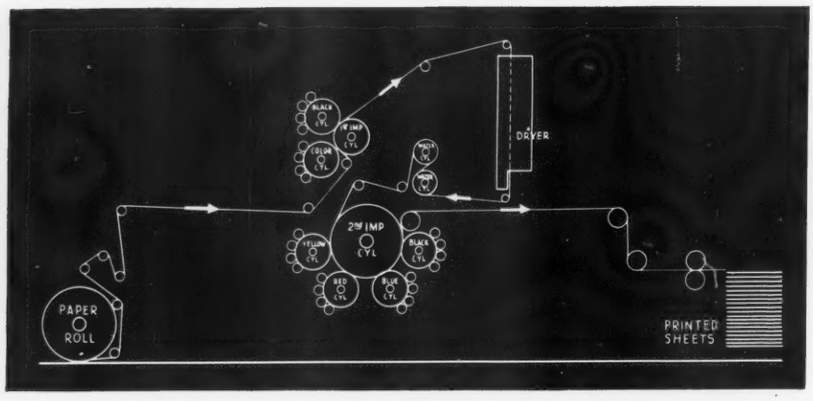
In the molding section six Ostrander-Seymour direct pressure presses are in operation. All black text pages are molded in wax. Color pages and full page black-and-white advertisements are lead molded.

7—Cottrell Two-Color Rotary Presses *for printing the inside sections (two colors) for* Collier's *and the* Woman's Home Companion.

8—Cottrell 4-and-4 Color Press. *This press prints four colors on each side of the paper once through the press.*

9—Cottrell 2-and-4 Color Letter Press, with steam drum drier, *prints 2 colors one side and 4 colors on the other once through the press.*

10—Cottrell Rotary Presses *in this section of the pressroom are used for printing the* American Magazine.



Two and Four-Color Cottrell Rotary Printing Press. *This diagram shows travel of the web through the press which prints two colors on one side of the paper, dries the ink by passing the paper through a dryer and between cooling rolls, then prints four colors, second impression, on the other side. Paper is sheeted at the delivery end of the press.*

Incoming Plates Tested Before Molding

It is necessary for us to know, since direct pressure is used on press reproduction, whether plates furnished by advertisers are properly made to withstand the process. Through our system, we have a means of determining beforehand whether a plate is suitable.

The square inch area of a plate determines the amount of pressure to be applied to that plate in molding. For instance, we will assume that a plate is 10 in. by 15 in. To determine the correct amount of pressure, multiply plate dimensions, (width and depth); times 4.

Example:

$$\frac{10 \text{ in. x } 15 \text{ in. } = 150 \text{ sq. in.}}{4}$$

$$\frac{}{600 \text{ Tons } = \text{ maximum}}$$

pressure for that particular plate.

A Bristol recording instrument is connected to each of our direct pressure molding presses in order to record the amount of pressure put upon each plate.

The wax cases for molding the black pages are placed in a thermostatically-controlled oven previous to molding to insure that all of them will be of uniform temperature. Eliminating the human element with respect to judgment of the proper temperature of the wax case is just one of the steps in the process to exercise control over the product.

Checking the Gauges

Because of usage over a period of time, most direct pressure hydraulic gauges do not indicate correctly the pressures for which they have been set. It can be seen that when this occurs incorrect pressure is applied during the molding of forms and hence, variable molding results will be obtained. This is disastrous to a progressive plate making process where preceding operations certainly will upset succeeding operations in making plates of uniform dimension. Therefore, our dial gauges are taken off the presses at 30-day intervals and tested on a master gauge for uniform setting.

The law of taking nothing for granted at times would seem to work a hardship upon the human element. The men in our organization, however, having been trained in precise manufacturing operations, are only too happy to know that they are turning out work within the prescribed limitations following a checkup of their particular equipment. It would seem, for instance, that the platen surfaces on a direct pressure molding press have been so designed and built that they represent the last word in permanency. However, we have found that with constant use the platens of the direct pressure molding will become slightly cupped or "dished." As a part of our control methods, the direct pressure press platens are checked for level surface at regular, though infrequent, intervals.

Plates Are Cast in Curved Form

Skipping over details of electric deposition of the wax cases and lead molding, it is simply stated all electrotype shells are nickeled for durability during the press runs. The nickeled shells are then placed in the plate-backing machine which is an important part of our plate-making method. The casting boxes in which the backing metal is poured against the shells is of the same curvature as the press cylinders. The shells are placed under clamps in the curved boxes. Over the shell is placed a thin sheet of tin. The boxes in which the shells are placed are supported on a circular frame containing 10 casting boxes in one machine and 5 boxes in another.

As the operator finishes placing the shell and tin sheet in the casting box, he rotates the ring supporting all of the boxes enough to bring the next box into position in front of his operating station. The boxes are electrically heated to 450 deg. F. The heat from the box passes through the shell and melts the tin foil sufficiently to tin the shell so that when the backing metal is poured into the closed casting box by another operator on the opposite side of the backing machine, the shell and backing metal will be joined, to all intents and purposes into one piece of metal. In other words, the shell is soldered to the metal body of the plate.

Solidifying the Plates

After the plate has been removed from the casting box, it is given what is called a roughing cut from the inside as well as trimming off excess metal from the edges. The bearers, and dead metal, however, are not removed at this time. The plate is passed along to a hydraulic solidifying press. Here the plate is subjected to pressure to remove air bells and to bring up the printing surface of the plate to constant printing level. The ram on this press is fitted with Hengst blocks all over its curved plate-contacting surface. These blocks are $\frac{5}{8}$ in. sq. and are set loosely into the surface of the ram, *i.e.*, they are free to move sidewise slightly within their sockets. The upper surface of the block which contacts the plates is toothed. The teeth are spaced approximately 64 per sq. in. The interstices between the teeth or projections are approximately 1/16 in. wide. The pressure of the toothed projections (the top of each block and tooth is a curved surface corresponding to the curvature of the press plate cylinder) changes the structure of the plate casting so as to make it solid. At the same time, the action is such that any low areas in the printing surface of the plate are brought up to true printing level against the arch in the press.

At this time, as a contribution to press pre-makeready, the highlights in the halftone area of a plate may be relieved by placing a paper mask over the highlight area of the printing surface of the plate. When the plate is subjected to pressure the solids are brought up to the thickness of the paper mask covering the highlight areas.

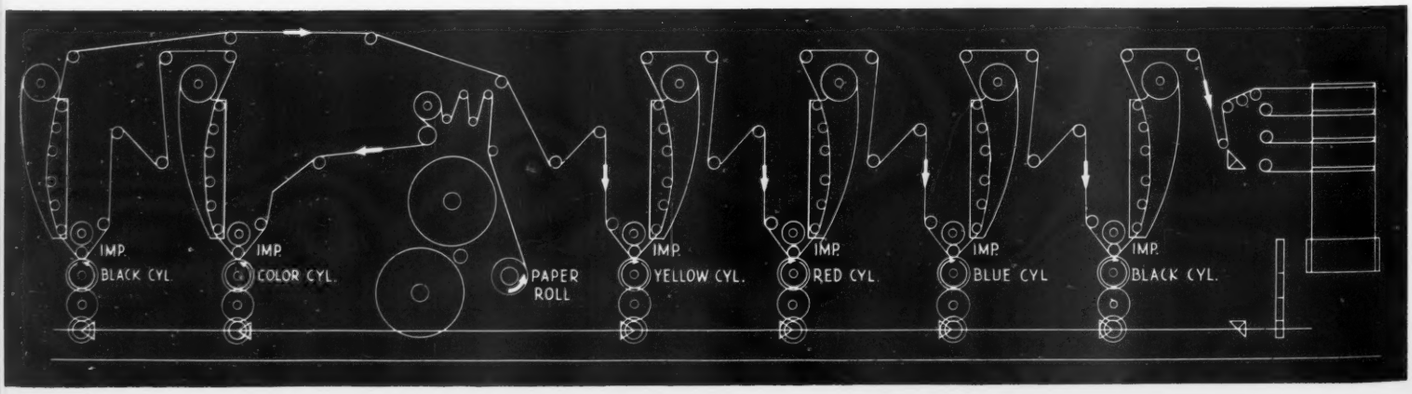
The plate is now given final finishing trim, then proved on a Cottrell-Bryant rotary proof press. If the proof indicates there are low spots in the plate, metal specks, etc., these low spots and metal specks are corrected before the plate is sent to the routing room.

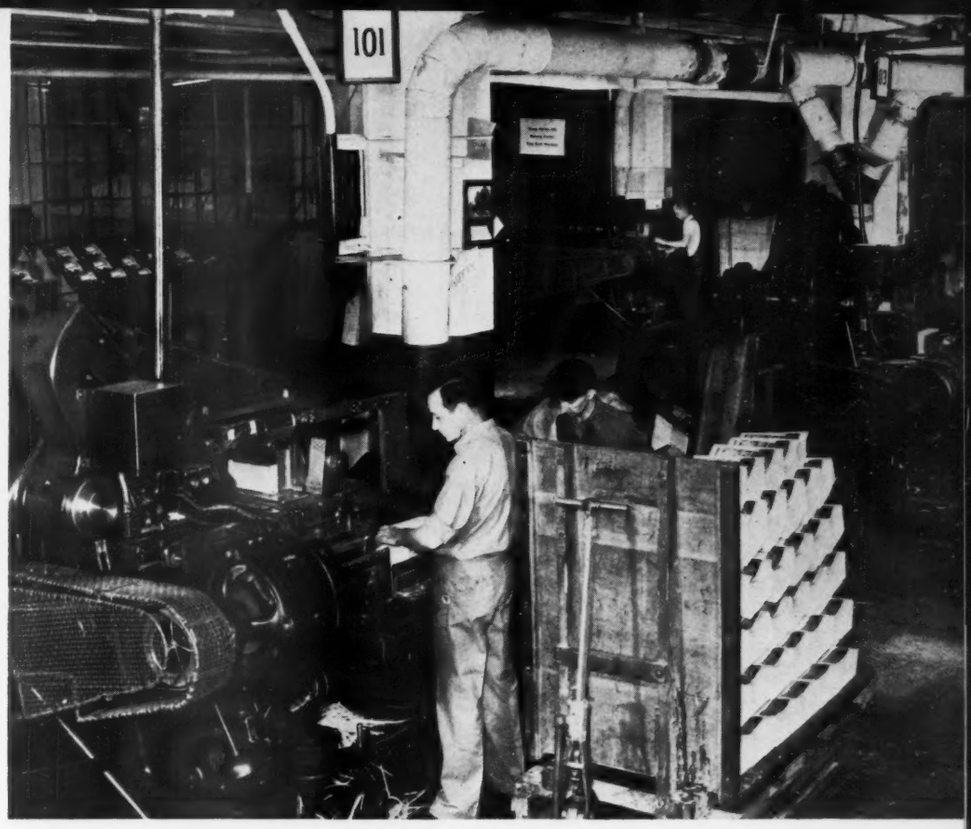
Plate Testing Department

In order to provide for sending as perfect a plate as possible to the pressroom we have installed a plate-testing department. This department contains an automatic self-inker miniature of a rotary printing press. Black and color plates are put on the press and proofed for printing element perfection, page size, surface level and color register. If the proof indicates that a plate does not meet these requirements it is returned to the plate finisher, who in many cases can correct the plate to make it acceptable to the pressroom. If the plate cannot be brought up to standard it is rejected and a new one furnished.

The plate testing department is operated by

Maximum rotogravure page gross production at the present time, in the Crowell-Collier gravure pressroom *on 4 Cottrell and 2 Goss presses is approximately 2,880,000 pages per hour, a considerable part of which is printed in full four-color process work. In this diagram is shown the manner in which the paper travels through the press for imprinting one color and black on one side of the web and three colors and black on the other side as well as web travel through Offen ink drying means. While in operation, there are approximately 190 ft. of paper in a press. Controls are provided to enable pressmen to hold the sheet in register on four-color process work.*





Three Sides At One Stroke. *Six Seybold Three-Knife Trimming Machines rapidly trim three edges of a pile of publications at one stroke. For instance, an 8 in. pile of* Collier's *or 17 copies of the* American Magazine. *A four-pocket "wheel" rotates at suitable intervals with momentary dwells to permit the operator to put a fresh pile of books in a pocket and to permit removal of the pile which has been trimmed. Simultaneously, the cutting action takes place. In the cutting department of the bindery, five Seybold Straight-line Cutters are employed for trimming the various magazine sections (mostly in multiple color) which are printed on large flat sheets.*

a pressman who understands pressroom procedure and requirements.

Letterpress Pressroom

THE Crowell-Collier Company operates on magazine production (exclusive of the gravure presses) 126 rotary and sheet fed presses.

Among our newer color rotary publication presses are 18 Cottrell 6-color rotaries. These presses print black and one color on one side of the sheet and black and three colors on the opposite side of the sheet once through the press at 4000 cylinder revolutions per hour, 8000 sheets per hour. These 18 presses are used for printing the inserts on *Woman's Home Companion* and *Collier's Weekly*. These presses are equipped with heat drying equipment for drying the first impression (black and one color) to provide for printing the second side in four colors immediately in the same press. Paper is fed into the press from the roll and is sheeted automatically at the delivery end.

The presses, according to their length of operation, are more or less equipped to do black and color presswork according to the latest engineering developments at the time of installation.

On the four-color side of the sheet Grammer parafin spray equipment is used to prevent offset.

Among other magazine production presses we have Cottrell 4-and-4 machines equipped with Selas units for quick drying of the sheet, that is, the press will print four colors on one side of the sheet and by means of Selas gas flame drying units the ink will be dried before passing into the next unit in the same press for printing four colors on the opposite side of the sheet. Before reaching the delivery, the second side also passes through a Selas gas drying unit so that both sides are dry upon delivery.

Eight Cottrell rotary presses printing four colors on one side of the sheet only are used for printing signatures for the *Woman's Home Companion*, *Collier's*, or *Country Home*, at 4200 cylinder revolutions per hour sheeting from the roll after printing. These sheets are then backed up on four-color Cottrell rotary presses delivering 3600 sheets per hour.

The Bindery

THE principal equipment items used in the bindery are 11 Kast Automatic gathering and binding machines, used on *Collier's* and *Country Home*, 8 Juengst machines used on *Woman's Home Companion* and *American*, and 6 Seybold Three-Knife Trimming machines. These machines always attract the interest of the visitor because, being built for large-run publication work, they are not seen in other than large publishing plants. The Juengst gathering and binding machines are built to gather, stitch and glue the covers on side-stitched books, and the Kast machines are used for saddle stitch operation.

The gathering and binding machine is rather long in construction because its operation is progressive, that is, the machine must be long enough to accommodate all of the sections and cover which go into one publication. The *Woman's Home Companion*, for instance, may consist of 16 sections and cover, making 17 signatures to be bound. The signatures are placed on a feeding board by bindery girls in the order of their assemblage, the last section on the first feed board and so. Automatic arms equipped with suckers pull down each section and turn and drop it on top of the previously assembled signatures carried by a conveyor belt as the assembled sections pass each station, until the end of the line has been reached when they are side stitched, glued and cover affixed automatically. When a magazine consists of less sections or signatures than the maximum capacity of the machine, some of the signatures feeding stations are run idle.

Collier's is a saddle stitched book, published on a five-day schedule. To bind *Collier's* magazine, 11 Kast automatic binding machines alone are required to handle the 3,250,000 weekly print order, running two shifts per day. Each of the 11 machines will deliver 1 copy each second when in full operation. Gathering and binding 3,250,000 copies of *Collier's* requires five days' production time.

Trimming the Books

After being bound the various magazines are delivered to the cutting section of the bindery where 6 Seybold Three-Knife Trimming Machines rapidly trim them to size three edges at a time. In the case of *Collier's* the cutter operator places about an 8 in. pile of magazines in the cutter pocket as the empty pocket is presented to his station. The action of the machine is continuous, each pocket being presented to the operator at regular intervals where it dwells momentarily after the placing of a pile of magazines. In case the operator should fail to deposit a pile of magazines in the pocket the machine continues its operation, and when the empty pocket is presented for trimming, the knives descend with idle motion. Five Seybold straight line cutters are employed for trimming the various sections which are printed on large flat sheets.

Gravure Department

AS HAS been stated in the first part of this article, all of *Country Home Magazine* with the exception of the cover is printed by rotogravure. Certain signatures or sections in our other three publications are printed by gravure in monotone and color. We will not enter into a discussion related to all the production details of the process, supervised by Gravure Superintendent W. M. Devers, but I do want to mention some of the things we are doing to assist in producing rotogravure printing for our publications. Among these are reproduction proofs of type matter, camera copying illumination, the Dultgen four-color process and the presses upon which the printing is done.

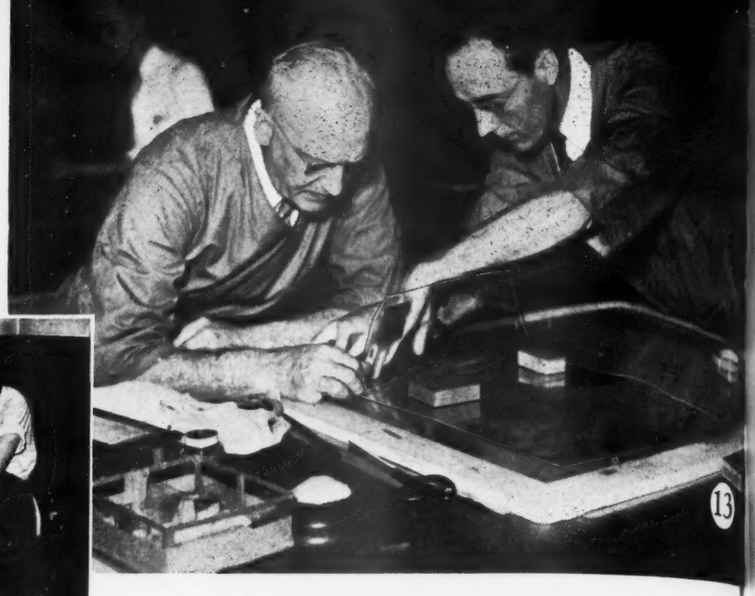
Transparent Proofs

Among other things developed in our plant by Preparatory Superintendent G. Jno. Morean, is the method for taking transparent or reproduction proofs of type matter for printing down on carbon tissue. Anyone at all acquainted with the gravure process understands that proofs of type matter must be letter perfect with respect to opacity and faithful outline of each letter character. Each character must be proofed fully without pin holes or faulty inking which might cause the ink to squeeze out beyond the body of the letter and distort the characters.

The smallest type reproduced in our plant is 4½ pt. cast on the Monotype for the "liner" page of *Country Home Magazine*. Reproduction

11—Rotogravure Photograph Gallery *in plant of Crowell-Collier Publishing Company, Springfield, Ohio.*

12—Proofs for Rotogravure Type Reproduction *are offset on transparent material called Translene by means of this Monotype-Directoplate Offset Proving Press. Type as small as Monotype-cast 4½ pt. is reproduced.*



13—Rotogravure Color Register Gauge. *Here a set of rotogravure color positives is being registered previous to transfer to the printing cylinder. After the images on the film have been superimposed in perfect register, holes are punched in the film, the position of which is determined by the pins on the gauge shown here. The films are then registered in proper position on the printing cylinders by means of a similar gauge.*

proofs for all of the other magazines in larger body sizes are also furnished.

Our reproduction proofs are taken on a Monotype-Directoplate Offset Proving Press. The forms are locked up in electrotype chases with guards or bearers. The press operator inks the form several times to insure complete coverage of the type. Then he "prints" or offsets the form directly upon the impression cylinder's synthetic rubber blanket. He now feeds to the grippers a sheet of Translene (a transparent celulose acetate material approximately 0.002 in. thick). A solid type-high block is substituted for the type to provide pressure between the translene sheet and the synthetic rubber blanket. The blanket offsets on to the translene. The transparent proof is now dusted with a specially prepared dry carbon black powder to render the letter characters completely opaque. The reader who is not exactly familiar with reproduction proofs will have gathered from this description that offsetting the type on the reverse side of the Translene sheet permits laying down the proof upon the carbon tissue with the inked side of the proof immediately next to the carbon tissue so that the letter characters cannot be distorted in the printing down operation which might be the case if the images were held the thickness of the Translene sheet (0.002 in.) away from the carbon tissue.

The Dultgen Process

The Dultgen process requires two sets of separation positives, against one set for the conventional gravure. It is necessary, with the Dultgen process, first, to make a set of negatives for each color. These are produced with a camera through the use of the proper filters. Then these negatives are reproduced to make positive films in a camera having a rotary screen of 150 lines to the inch.

Let us consider the production of a yellow positive first; the screen angles are vertical and horizontal at 90 deg. to each other. The red positive uses 15 deg. of the vertical; the black 45 deg. of the vertical; the blue 75 deg. of the vertical, and the yellow 90 deg. of the vertical screen angle.

As mentioned above, two sets of positives are required in Dultgen, so after the screened set is produced, a set of continuous-tone positives is also produced on film.

Now we have two sets of positives—one screened and one continuous-tone, which must be laid down on the copper shell of the printing cylinder. In short, the Dultgen process is no more than an inverted half-tone.

In the conventional method of reproduction, we use only one positive film, screening the carbon tissue before transferring the image from the film to the carbon tissue. In the Dultgen method, however, we do not screen the tissue, but we have a screen, as explained above, in one of the positive films. The Dultgen method first transfers the screened positives onto the carbon tissue and then, in register, we transfer the continuous-tone positives. The developing and the etching are more or less the same for both Dultgen and the conventional methods, except that the time element and the strength of acid may differ.

The Dultgen process is used almost entirely for color reproduction but sometimes it is resorted to in monotone work when a special tone is desired.

Rotogravure Presses

At the present time our maximum rotogravure page gross production on 4 Cottrell and 2 Goss rotogravure presses is approximately 2,880,000 pages per hour, a considerable part of which is printed in full four-color process work. One way in which to give the reader an idea of the printing capacity of these presses is to explain that on an 8-page signature the cylinder revolutions are 15,000 per hour, which is equivalent to 60,000 folded 8-page signatures per hour. On a 16-page signature, of course, the production would be 30,000 folded copies per hour. These are 6-color presses, printing 2 colors on one side and 4 colors on the other side of the sheet.

The presses are equipped with patented Speedry enclosed ink fountains, by means of

14—Goss Rotogravure Printing Press.

15—Cottrell Rotogravure Printing Press.

which the ink is pumped from the reservoir to the design cylinder and the solution is kept in constant state of agitation to preserve uniform color quality in the ink without evaporation.

On all rotogravure presses, explosion-proof motors, controls and wiring system have been installed. The drive motors are completely enclosed but are cooled and ventilated with circulating air.

When printing color, the rotogravure pressman must maintain registration through compensating rollers adjusted to the running speed of the press similar to the means employed on relief magazine and newspaper printing presses. When it is stated that there are approximately 190 ft. of paper in one of our gravure presses while it is in operation, it can be seen that keeping a rapidly moving web in proper relationship between several printing units is sometimes a difficult problem.

As a further aid to color registration, the Cottrell presses are equipped with a design cylinder circumferential adjustment whereby it is possible to move any design cylinder in the press ahead or back slightly without disturbing tension adjustments.

The design cylinder circumferential adjustment is made by means of adjustment device by the pressman outside the press while the press is in operation. The design cylinder is rotated, forward or back, circumferentially to bring it into register with the design cylinder in the next printing unit. The device usually provides about ½ in. movement on the surface of the cylinder, either way, forward or backward. Any one color can be registered to any other color without affecting the remaining colors.

There are a pair of helical gears in the cylinder drive housing for each printing unit. These gears run in oil. A fine screw adjustment, connecting with adjustment means outside the press enables the pressman to displace one member of the pair laterally to produce circumferential movement of the design cylinder.

With the ordinary web compensator, which alters the register by changing the web length between the printing units, the colors must be registered in a certain exact order or the correcting of one color will throw out the others.

The normal tension of the running web is not affected by this adjustment, because the change is minute compared to the amount of paper which passes the cylinder while making the adjustment. Hence, it is unnecessary to make tension adjustment while using the circumferential device.

Speaking from the pressman's point of view, if the web tension could be held perfectly uniform, there would be no variation in register at any press speed, once it was set. This is not possible, because the web changes from the outside of the roll to the core, and the slippage of the brake shoes on the brake pulley changes at various speeds, so that slight changes in setting are necessary from time to time. These changes may be only a line, especially at sustained web speeds.

An electric clutch between the press and the folder functions so that in case of a break the web cannot be dragged into the folder.

All design cylinders are transported to and from the press by overhead trolley hoist system.

Offen Rotogravure Ventilating and Drying Apparatus

The development of high-speed rotogravure printing has brought about radical changes in the design of presses, the development of new inks, and the need for ventilating and drying apparatus in conjunction with high-speed printing. Rotogravure is now printed at web speeds of 1000 feet a minute to as high as 1400 feet per minute.

Since rotogravure inks contain a large percentage of volatiles, a considerable amount of vapor is liberated when the inks are dried. Due to the high speed of the web, a large volume of ink is used. As a result, it becomes important to remove these fumes or vapors rapidly, in order to prevent an accumulation, which may retard the drying, as well as create objectionable ventilating conditions. These have been worked out by B. Offen & Company on a basis to bring about satisfactory results.

It is important to dry the wet inks rapidly, since the printed side passes over rollers in approximately one-half second after printing.

In conjunction with the rotogravure equipment, no steam drums are used. All the drying is accomplished by the use of air only.

Attainment of Perfection

One is liable to be sticking out his neck when he makes the assertion that precision printing is a practical thing. I don't mean to state that we have attained perfection. All of us here get encouragement from our efforts in seeking perfection—and we have lots of fun trying. We prefer to labor toward the ideal of perfection and we do bear down hard in striving. It is not the intention of the writer to convey the impression that we are the only ones doing things in a certain way, nor that the equipment we use is the only kind that will produce the effects for which we strive. It is our thought to tell you that we believe most sincerely in our profession and that we want to strive constantly for perfection, even though we may never attain it. In our business, production costs are just as important a consideration as in any other competitive field.

Lectrocut One-Man Engraving Process

The first halftone zinc cut of a number to be made successively by the Lectrocut Engraving Process can be finished in 35 min., and each succeeding cut may be made every 5 min. without the use of dragon's blood or etching acid, states Western Newspaper Union. It is further stated that operation of the equipment is virtually automatic by reason of calibrated camera instruments and timing devices for the various plate finishing operations.

On a 65-line screen halftone tested by the writer there was a depth of 0.004-0.005 in. in the highlights. The dot structure is cone-like. The thickness of the zinc stock from which the cuts are made is approximately 0.0625 in. Only a specially coated zinc can be used, *i.e.*, the printing face of the plate is coated by developers of the Lectrocut process. The reverse or back surface of the plate is coated with asphaltum to stop plating and decomposition in the plating unit.

The Lectrocut equipment consists either of a 5 in. by 7 in. unit or an 8 in. by 10 in. unit. Equipment is sold in complete cut-making units. The all-metal camera is fitted with especially calculated lens stops, rheostatically controlled photo-flood lighting, special short focal length lens and a diamond ruled 65, 85, or 110 line glass screen. The camera reduces copy to ¼ and enlarges to 1¾.

Other items in the equipment include negative developer, negative fix and hardener, emulsion or sensitizing solution, an electrically heated and operated plate-whirler for spreading the sensitizing solution, electric oven for the burning-in of plates, a pressure printing frame and a plating unit. The plating unit is entirely automatic in action. Plates ready for "electric etching" are suspended in a salts solution in the tank. The unit deposits a copper film on the printing surface of the plate and before removal of the plate also breaks down or decomposes the non-printing areas of the plate so that the printing image is in relief.

Operations in making a cut are as follows:

(1) Screened film negative is prepared as usual in the camera to proper size.
(2) The pre-coated zinc plate is coated with and the emulsion solution is spread evenly over the plate and baked in the plate whirler.
(3) Plate is removed from the whirler and put into oven for hardening.
(4) Screened negative is placed over sensitized plate and placed in printing frame for printing down on the plate.
(5) Plate is washed in water.
(6) Plate is now placed in plating unit.
(7) After plate has been "etched" *i.e.*, printing image plated with copper(and non-printing areas decomposed) in plating unit and washed in clear water, it is ready for mounting on base.

Further information may be obtained from Western Newspaper Union direct or through *Printing* Equipment *Engineer.*

This illustration was made by the Lectrocut Engraving Process. On this particular cut a 110 line screen was used. Sponsors state 65 and 85 line screens also can be furnished. When a zinc plate is placed in the bath, a thin coating of copper is built up on the printing image and before the plate is removed from the tank the non-printing areas have been decomposed to make the plate suitable for relief printing.

New Secretary at Bantam

R. B. Nichols has just been elected Secretary of the Bantam Bearings Corporation, South Bend, Indiana, subsidiary of The Torrington Company, Torrington, Connecticut. Mr. Nichols has been associated with the bearing business for the past fifteen years, most of this time at Bantam.

No Waste Motion

In Superintendent Richardson's Memphis Commercial Appeal composing room recently rehabilitated and rearranged

(*See Floor Plan Diagram with Key Page 64*)

By MAC SINCLAIR

COMPOSING room equipment and work flow layouts are always an intriguing study for printing plant executives. Perhaps this is due to the varied and assorted shapes of floor areas and the nature and amount of production to be handled. Each composing room, therefore, is a study in itself when laying out the department for most efficient operation. Sometimes, arbitrarily outlined areas call for the exercise of ingenuity to get all of the equipment within the allotted space and yet provide so-called straightline operation or work flow.

Such a composing room is the one supervised by Superintendent R. J. Richardson of the Memphis (Tenn.) *Commercial Appeal*. The floor area is approx. 47 ft. by 129 ft., exclusive of proofroom. The department was rehabilitated and rearranged recently. A new floor, paint, lighting and ventilation system was given proper attention.

Of primary interest when first seeing a composing room layout is the work flow line. In Mr. Richardson's layout, the arrangement of the news section of the room is contingent upon a centralized news copy desk, dump, correction bank and news storage. Cooperating with the news section, as well as serving the ad alley, the ad alley line-composing machines are so placed between the news composition section and the ad alley that the ad machines work to both departments—the ad alley one way and the news bank the other. This is an important item in the *Commercial Appeal* composing room because of the quantity of display heads, art lines, etc., that are composed in the ad room and on the ad machines.

Work Flow

In the accompanying floor plan layout, editorial copy comes to the copy cutter's desk *1* by means of pneumatic tube delivery *32*. Copy is run out to the straight-matter machines *8*, the head machines 2, 3, *4* and *6*. Leads go to machine *6*, while art lines and captions go to machine *4* and to ad alley display machines *9*.

Straight matter from machines *8* and the heads, cut captions, leads and art lines are delivered by the operators to news dump and assembly bank *10*. If there is half-measure box score composition or other trimming work it is trimmed on saw 13. Editorial matter is then proofed on press *12* and galleys are deposited on correction bank *11*. All proofs are sent to and received from proof room *44* by a Lamson Finger Pickup System which has delivery or receiving capacity of 5 proofs per min.

After type is revised and corrected it is taken from tables *15* and *16* to the makeup department tables *17* and trucks *18*, or else stored in storage banks for future or Sunday use.

Dual Operation

Dual operation of certain specialized equipment is provided for. There are two headletter machines 2 and 3; two display headletter machines *4* and *6*; two ring machines *5* and *7*; two editorial composition machines (not indicated), and two corrected type banks *15* and *16* with separate storage for future type underneath.

Storage banks are lettered, and shelves numbered. As galleys are revised they are indexed by a slug placed at the top. When finally OK'd they are stored on the shelves corresponding to section and number as indicated on the slug on top of revised galley. Makeup editors have duplicate proofs of these galleys and can readily locate any story shown on proofs by going to the section and indicated shelf number.

Machinist's Department

The machinist's department is indicated at *26*. Adjacent are the Elrod *28* and the Monotype Material Maker *29*. The machinist force operates these machines.

Superintendent's Office

The superintendent's office and cost-accounting department are contained within the room *45*. Clear glass enclosed walls provide an unobstructed view of the entire composing room and proofroom.

Proof Room

The proofroom *44* has been isolated to provide as much quiet as possible. The room is enclosed with clear glass, and is ventilated by ceiling fans with reversible blades so that the air may be drawn up or down as the convenience of the proofreaders may demand.

Ad Alley Layout

The ad alley layout is self-explanatory upon inspection of the accompanying diagram. Interposing the ad alley line-composing and display machines between the straight-matter or news department and the assembly section of the ad alley makes for production flexibility in cooperative work. The ad alley foreman's desk is indicated at *40*. Saws, strip material mitering machines on one side, Ludlows and Ludlow Cabinets on the other.

Paint, Floor, Lighting and Ventilation

Recently, the entire composing room was repainted. The walls and ceiling received two coats of aluminum paint. A dark green wainscoting with 2 in. black border stripe extends around the room.

One of the ideas carried out which makes for handsome appearance, orderliness and incentive for the printers to help in keeping the surroundings clean consisted of painting all of the equipment except the line-composing machines. All stands and furniture were painted with Sherwin Williams No. 29 olive green. This is a standard paint and color which was selected so that all future added equipment can be painted to conform to the color scheme. All of the "iron" such as the Ludlows, Monotype Material Maker, proof presses, etc., received coats of a bluish-black paint.

The Floor

The floor was leveled off as much as possible and a new flooring of 1 ft. sq. asphalt tile was installed over the entire floor area. Mr. Richardson states that this floor has considerable sound-proofing effect by way of insulating or neutralizing vibration from composing room machinery. To eliminate as much wear as possible, all makeup trucks were equipped with ball-bearing swivel casters having hard rubber tires. Each caster is double-wheeled, 4½ in. diam. with wide tread. The asphalt tile flooring has been used in other Scripps-Howard plants for approximately 8 years in which are used steel-wheeled casters. The flooring has shown very little if any wear.

Lighting

General lighting is employed in the *Commercial Appeal* composing room with the exception of the correction bank and dump. On each of the 10 ft. correction bank and dumps *10*, *11*, *15*, and *16*, two 4 ft. fixtures, each containing (3) 40 watt fluorescent daylight lighting tubes, have been provided. The men working under these lights at night have the benefit of shadowless artificial daylight.

The general lighting in the room is furnished by General Electric's gas and vapor lights (400 w. each) with about 800 W. brilliancy. These lights in reflectors are suspended approximately 1 ft. from the ceiling. The illumination is practically without color distortion.

Ventilation

The composing room is ventilated by a hot air exhaust duct of sufficient dimension in the center of the room on the ceiling where the air withdrawn from the room is discharged upwardly into the outside atmosphere. Three additional exhaust fans are provided on two sides of the room. The exhaust fans are equipped with double-throw switches so the air can either be exhausted or drawn into the room as occasion demands. A room temperature ranging from 5 to 10 deg. cooler than the outside temperature is maintained during the hot season.

Electric and Gas Facilities

As part of the improvement program, the entire composing room was rewired with wiring heavy enough to carry 50% greater load than present demand. All composing machines were rewired. Motor wiring is enclosed in flexible conduit. Front and back machine lights and a bell and red signal light system were also included in the new wiring, all enclosed in flexible tubing. The main line gas pipe was swung from the ceiling and the electric conduits were clamped on each side of the gas line.

(*See Diagram, Page 64*)

New England Conference

As was announced in the August issue of *Printing* Equipment *Engineer*, the first New England Mechanical Conference will be held at Mohegan Hotel, New London, Conn., on Sunday, October 8. Production Manager Herbert Stanger of the *Christian Science Monitor*, is program chairman for the conference.

It has been announced by Publicity Chairman Andrew P. Palmer of the Woonsocket (R. I.) *Call*, that Gilbert P. Farrar, widely known typography expert, will be the principal speaker at the Sunday afternoon session. His subject will be *The Newspaper of Tomorrow Typographically*.

Members of the New England Composing Room Executives' Association will hold their fall meeting jointly with the newly formed New England Mechanical Conference.

This sunlit Fairchild Aerial Survey Picture shows the three-story main plant of ATF at Elizabeth, N. J. Contains more than 300,000 sq. ft. floor space.
Floors, from top down, are utilized as follows: Third Floor—Type foundry, new products and offices. Second Floor—Press assembly, sales, purchasing and advertising departments. First Floor—Press parts manufacturing and type stock room.

ATF

A word peep into the press manufacturing, type founding and welfare activities of a printing equipment supplier's organization.

By H. I. LEWIS*

After taking this word peep into American Type Founders' plant at Elizabeth, N. J., the reader will understand why 1000 skilled men; more than 500 modern machines; several thousand accurate tools; an extensive sales force and a modern, three-story plant with 300,000 sq. ft. of floor space at Elizabeth N. J., are required to permit the company to function in its business of supplying many printers with production equipment. Our principal purpose, however, in discussing ATF is to tell you something about the making of Kelly presses—and personnel operations. The latter subject is always of interest to production and mechanical executives.

One year's production of Kelly Presses alone requires 1500 tons of castings. Patterns for these castings are made in ATF's own woodworking department. A metallurgical staff with its laboratory checks raw materials as to carbon content, hardness and photomicrographs of grain structure.

For the sake of accuracy in the finished press, all large tools, jigs, fixtures and special cutters are not purchased from outside sources but are made in ATF's own tool shop with its staff of 30 experienced tool-makers.

Turning Press Cylinders

During the past two and a half years, ATF has invested $350,000 in tools and equipment for the attainment of higher standards of accuracy. Turning a press cylinder is one example. The rough casting is mounted on a new type of lathe that handles eight different tools simultaneously, the cylinder body, hubs, ends and sides. This type of machinery assures interchangeability and saves production time for the printer when parts need replacement.

Long Service Records

The man at the machine milling a press column or drilling an ink fountain bracket for the latest crop of Kelly Clippers may have seen the same work being done on the first Kelly Presses in 1915. He looks less boyish today; his graying hair reveals his years of experience. Today he is 25 years older but is as proud of his work as ever. From the beginning, his training has been focussed on the ultimate use of the Kelly press by the printer. There's a good reason for the critical standards of construction.

Inspection System

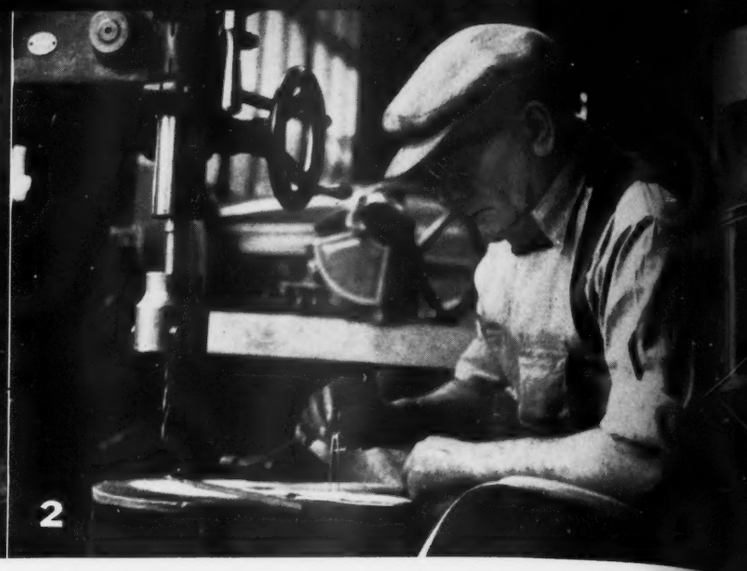
The work flows from one group of machines to another, pausing only for inspection. Veterans handle these inspections with an array of height gauges, indicators, vernier calipers, "Joe" blocks, micrometers, special gauges and blocks that search the accuracy of each operation.

It takes 32 mechanical operations, most of them performed on different machines, to produce a gripper tumbler for a No. 2 Kelly. To make a single gripper finger 22 operations are required. Each of these operations is followed by its own special examination to which is added the surveillance of the men who tend the machines and the periodic check-up of a roving inspector.

When finished, heavy parts move directly to the assembly floor, lighter parts go to the central storage room from which they are drawn as required by the men who assemble the presses. The central storage room is bigger than a city block. The finished parts are transported to it by a fleet of electric trucks operating over wide lanes that traverse the two floors devoted to the manufacture of Kelly Presses.

A familiar figure in the plant is ATF's President, Thomas Roy Jones. An engineer by training he enjoys watching the transformation of a blue print into a finished press and frequently stops to help figure out a problem. A visitor is always impressed by the casual manner of the men in the plant. There is no stiffening, no effort to look busy as the

Vice President, American Type Founders, Elizabeth, New Jersey.



1—Grinding Press Columns *to within 0.001 in. ATF has invested $325,000 in new machinery during the past two and one-half years.*

2—Long Association. *From the first Kelly in 1915 to the Kelly Clipper in 1939 covers the service record of many ATF veterans—develops pride of workmanship and accuracy.*

"boss" passes through on one of his frequent jaunts. For this there's an interesting reason—thanks to the company's management policy.

Assembling and Testing

The Kelly Press begins to take its final form on the three sub-assembly lines which produce inking mechanisms, deliveries and feeders. Each man is a specialist qualified by years of experience to perform his particular operation with the greatest skill. The ink fountain sub-assembly is typical. No tolerances are allowed for an ink fountain. Anything less than a perfect fit of all parts might cause ink leaks in the pressroom.

The check-up that attends final assembly of the Kelly Press is illustrated by the test of cylinder and bed for impressional strength. The cylinder is turned over against the resistance of 500 lb. springs set across the bed of the press. Thereby the bed is subjected to 300 lbs. pressure for each linear inch which is more impressional strength than the press can ever use.

When the press is completely assembled it is not yet ready for delivery to the printer. First, it is exercised for 30,000 impressions down on the bearers at low, moderate and high speeds. Following this period of operation, the new press is subjected to searching tests for accurate "dot-on-dot" register. After all operating inspections are completed, the finished press is disassembled for an examination of internal parts. The press is not removed from the floor until the testing report is complete. It must list all tests and bear the approval of the specialist responsible for each one.

The finished press leaves the plant through a shipping department that occupies about 7500 sq. ft. floor space. There it receives a protective crating and moves to a railroad siding which runs the length of the plant and can accommodate as many as fifteen freight cars at one time.

Expansion of Activities

A section of one of the press-building floors has been set aside for the expansion of activities following the deal that brought to ATF the facilities of Webendorfer-Wills offset-lith equipment manufacturing company. The Little Giant, a Webendorfer letterpress machine, is now on production at Elizabeth. Plans are in progress for the manufacture of Webendorfer offset presses in Elizabeth, too. This will relieve the Webendorfer plant at Mount Vernon, New York, to devote all its facilities to orders for standard and special web offset presses.

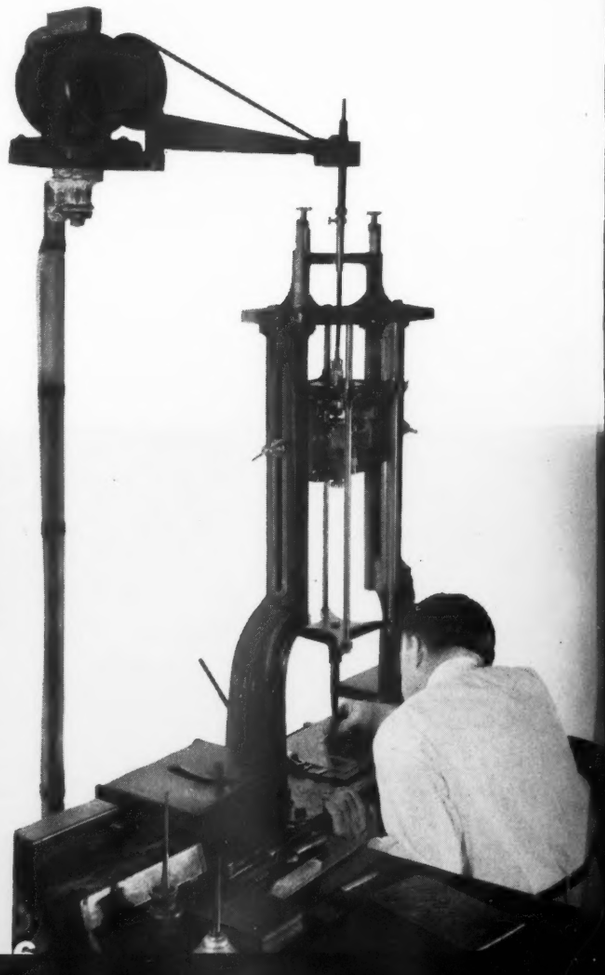
The Type Foundry

The type-founding activities of ATF occur on the third floor of the plant at Elizabeth. Chief equipment is a stock of 2,500,000 matrices divided among 3000 type faces; and 233 type casting machines. In the foundry can be produced 12,000 lbs. of type a day or approximately 3,000,000 lbs. of type a year. ATF handles approximately 17,000 type orders every month.

Once a type design is completed by the type designer, a combination of skillful craftsmanship and use of precision tools are required in

5—New Press on Paper *for several years undergoing refinement by ATF engineers before blue prints are ready for release to the pattern shop.*

6—Matrix Engraving Machine. *Tool guided by the brass pattern at the base by the operator cuts a single character into a blank of watchmaker's nickel at the top in ATF's matrix making department.*



3—Snack or Drink? *Mid-morning and mid-afternoon snack or drink may be had at the refreshment stand when it rolls through the ATF plant.*

4—ATF's Kelly Clipper Assembly Floor. *Final assembly is done by specialists in specific jobs.*

the preparation of the matrices. Proper depth of face, accurate set width and alignment are the principal requirements of the finished matrix.

The metal used in casting type is a special alloy of lead, tin, antimony and copper that produces the proper degree of type hardness. It is constantly and thoroughly examined for analysis in ATF's chemical laboratory by an experienced metallurgist.

Foundry type is cast under the most exacting conditions and is subjected to rigid inspection. A series of sensitive gauges, specially designed for the purpose are used by both operators and roving inspectors to check the accuracy of important characteristics of the finished type.

Other foundry products include brass type; an extensive line of leads and slugs; a Brass Rule Department with a list of 50,000 different items used in the composing room.

Executive Operations

The entire manufacturing program, including the type department which occupies the third floor plant, is directed from the office of Vice President Ed Williams who is in charge of all plant operations and is responsible for coordination of men and machines.

Distribution of ATF products is under the leadership of Vice President Frederick B. Heitkamp. Through branch managers he directs 150 ATF representatives who are in daily touch with the printing problems of thousands of customers. He guides a corps of service men who spend their days in pressrooms in every part of the country.

The Engineering Department assists printers who are expanding their present facilities or moving to larger quarters. Besides furnishing the new equipment, experts in plant layout arrange composing room and pressroom for smooth flow of work.

While the manufacturing plant is busy with present-day production, one sequestered corner of the third floor is quietly concerning itself with the future. There, the writer and his staff comprise the New Products Department. In this department are developed product improvements that will be offered in the future to overcome printing problems.

Other ATF Activities

Limited space does not permit relating all the various interesting details about our company, but some of the important activities are given here:

• ATF's Education Department helps school officials to lay out classrooms where printing is combined with manual training as a means of "teaching by doing." Progressive educators are advocating the inclusion of printing as a means of teaching English, History, Fine Arts and the spirit of cooperation and united effort. Relatively few students of Junior and Senior High Schools go into commercial work, but the training has been found valuable from a cultural standpoint.

• Aside from business, ATF has collected and assembled a valuable Typographic Museum and Library which were recently installed at Columbia University. Its treasures, probably the richest of its kind in the world, provide a source of information and inspiration for artists, designers and students of printing.

• For the employee's physical comfort ATF maintains a completely equipped plant hospital with a graduate nurse always in attendance.

• ATF employees are proud of their accomplishments in the several state-wide safety competitions. In 1929 and 1935, ATF won certificates of merit. In 1930, the plant was declared winner in its group with a perfect record of no accidents involving lost time.

• After 10 years of service, every ATF employee participates in a retirement fund provided by the company. Employees with long records of service can qualify for almost 6 months' pay when retiring.

• Employee participation in management problems is invited by the "suggestion system." A committee which reviews the suggestions rewards workmen and supervisors according to merit. Not long ago a man received $300 for an exceptional contribution.

• A recently inaugurated Credit Union encourages consistent thrift among employees and augments their savings with an attractive rate of interest. It also provides protection against loan sharks by making loans for emergencies available at low cost.

7—Boring a Jig *for Kelly Clipper must be accurately done between zero and 0.0005 in. ATF's tool department is manned by 30 toolmakers and fine machinery.*

8—Inspectors Pass Every Operation *in manufacture of ATF's Kelly presses. Precision gauges and indicators sensitive to less than 0.001 in. show parts deviating from standard.*

Hard Packing

An impossibility for printing on newspaper presses with present plate-making system—Suggestions for improvment

By FRANK MILNE*

Frank Milne, Mechanical Superintendent of the Calgary Herald, *Calgary, Canada.

THERE is a decided tendency throughout the mechanical section of the newspaper printing industry to insist that hard packing is the be-all and the cure-all for every defect in newspaper printing. Some devoutly hope and many ardently desire that the day is not far distant when this pinacle of perfection may be reached and then all press troubles will be over and no poorly printed newspapers will be seen anywhere.

This article is an endeavor to prove that hard packing is impossible for newspaper printing as practised today with stereo plates cast from pulp mats. It is the opinion of the writer that the packing, generally in use on the impression cylinders of the rotary newspaper presses at the present time, has been made hard enough, if not too hard, for all practical purposes.

Need for Plate-Making Improvements

On the other hand, there is a great need for improvement in the making of curved stereo plates, both in the molding of the mats and the casting and finishing of the plates. Until these improvements have been placed in the hands and at command of the stereotyper, the pressman must keep on making up with squeeze and ink for the deficiencies of the plates.

Every pressman knows that the printing will be perfect with very little impression when a new set of blankets is put on the press if the impression is adjusted with a set of classified ad plates. (This type of page is practically level all over its surface-to-paper height.) When, however, plates are received containing halftones, solids and various kinds of cuts, the impression has to be readjusted to make these pages print well. The extra squeeze is an attempt to make up for the inequalities in the plates.

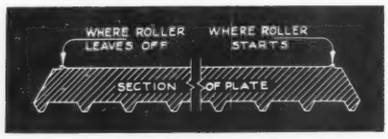


Fig. 1—Cross-section diagram to show stereotype plate in which high edges have been cast at the left and right edges of the plate. The molded mat is thinner at the edges of halftones, solids, cuts and letters because the mat oozes out a little owing to the space beside the edge allowing the mat to flow into the space. The effect is noticeable on the right and left edges of curved plates where the molding roller starts and where it leaves off.

All plates, except those composed solely of line-composing machine slugs, consist of a series of different levels, that is, various parts of the plate, depending on the character of the makeup and the subject of the cuts, are different heights to paper. The leaders and column rules stand highest. In fact, if they are type high in the form they will be far too high on the plate. The body type is higher than the halftones and solids, the latter two being generally 0.005 in. lower than the type.

Then, over and above all these deficiencies, the plates vary one from another when delivered from the plate-casting machinery. The pressman has to allow for these variations and do the best he can with impression and ink. The amount of impression and the quantity of ink used are the only tangibles over which the pressman has any control. He has no control over the plates, paper and a number of other items.

What Kind of Surface Has Stereo Plate?

What kind of a surface has the stereotype plate? Can the stereotyper make a plate that will be perfectly level all over its surface in its height-to-paper, from a form of type, line cuts, halftones, solids, vignettes, column rules, leaders, etc., even if they are all made different heights in the form according to the nature of the cut? The answer to this is *no!* It cannot be done owing to the nature of the medium, *i.e.*, the pulp mat, from which the plates are cast. A little inquiry into this to see why it cannot be done will not be out of place.

Illustrating Pressure Flow

The conditioned (dry) mat, in use today, may be considered a fibrous plastic; true it is not very fluid, neither are asphalt, putty or lead, all of which will flow under pressure. The conditioned (dry) mat will also flow to a certain extent when pressure is applied to it. Therefore, to get an accurate idea of what takes place when a mat is molded, either by direct pressure or rolling pressure, we must take some other substance that we recognize as a fluid. Take a can lid say 3 in. diam. and ¼ in. deep and fill it with putty. Press two or three fingers into this putty just as if molding the fingertips. When the fingers are pressed into the putty they sink to the bottom of the mass and incidentally the putty overflows somewhat; then, take a sharp pencil and push it into the putty, the pencil will go to the bottom much more easily and with less overflow. Next, take a piece of wood the exact size of the can lid, place it on the top of the putty and endeavor to push it downwards. It is impossible to force the wood down any distance. In fact, the putty will compress but very little. If the wood is not exactly the same size and shape as the can lid, the putty will ooze out at the edges of the wood. This is substantially what takes place when a conditioned (dry) mat is molded.

The type, rules, leaders and line cuts all go deeper into the mat than it is possible to force the solids and halftones. In fact, owing to the construction of the leaders, they will push the fibers of the mat apart and penetrate altogether at times. Therefore, we must lower the column rules and leaders below type-high in the form. How low they have to be made will depend on the method and material used in molding.

High Edges on Cast Plates

The molded mat is thinner at the edges of the halftones, solids, cuts and letters of all sizes, however small, because the mat oozes out a little owing to the space beside the edge allowing the mat to flow into the space. In this way we get a series of cuppings, or high edges on the cast plate. The effect of this is very noticeable on the right and left edges of all curved plates where the molding roller starts and leaves off. The letters on these edges are sometimes high enough to cut through the paper and invariably abrade the facing of the blanket long before there is any sign of wear elsewhere.

Why do the edges of all vignetted cuts stand high on the plate and print heavily? Simply because the mat oozes out at the edges and is thinner there than on the body of the cut, consequently if the mat is thinner at the edge of the cut, the cast must be thicker and stand higher to paper. This is the reason why highlight halftones are never a success if they are two or three generations removed from the original, each generation becoming worse than the previous one.

Limit of Compressibility

Under normal molding pressure a mat 0.032 in. thick can only be compressed down to 0.028 in. or 0.026 in. When it is compressed this amount it is practically solid and very great pressure is required to make it ap-

preciably thinner. The mat on a large halftone, or solid cut, has no opportunity to ooze out except at the edges, and must be thicker on the face of the cut than it is on the type, rules, leaders, etc., where it can flow out between the characters. The mat on the type, after molding, is possibly only 0.022 in. thick while on the cut it is 0.028 in.

The type will reach nearer the back of the mat just as the fingers and the pencil did in the putty, and the halftone, which, to all intents and purposes, is a solid like the wood in the can lid, cannot impress itself as deeply as there is a limit to the compressibility of the fibers. That is why the stereotyper cannot make a level plate, because no matter how high the halftone is made in the form, the mat cannot be compressed enough to bring the cut up to the level of the type in the cast. If the halftone is raised above the level of the type as much as 0.025 in. or even 0.035 in., the mat, when molded by rolling pressure on this high cut, will stretch enough to fracture the face. If, however, this high cut is molded by direct pressure there is less tendency to stretch. Thus the mat can be compressed more without fracture of the fibers by direct pressure than is possible with rolling pressure.

Underlaying Cuts

Increasing the height of a cut to a point where the face of the mat is fractured, of course, defeats the purpose, but raising the cut just high enough so that the face will not fracture is a great help, as the mat is then compressed as much as possible without damage. The higher the cut is raised the more the mat will be compressed although not in direct proportion to the height the cut is raised, but rather in a decreasing proportion. By this is meant that it becomes increasingly more and more difficult to get compression on the mat. If we can compress the mat to 0.028 in. without raising the cut above type high, then to compress it to 0.027 in. we have to apply an underlay to the cut of about 0.003 in. or 0.005 in., and if we want to compress the mat to 0.026 in. we have to underlay the cut 0.010 in. or 0.012 in. or more, and if we underlay the cut in an attempt to compress the mat to 0.025 in. we would very likely have to underlay it from 0.025 in. to 0.030 in. but the chances are that the mat would fracture and be useless.

When direct pressure is used in molding, the cuts can be raised higher in the form before fracturing of the mat takes place. Normally, casts made from a mat that is molded by direct pressure are more nearly uniform than those made from a mat molded by rolling pressure, consequently they need less pressure to print perfectly. The oozing or flowing at the edges of the cuts and letters, however, is substantially the same in both methods of molding.

The stretching that takes place under rolling pressure is a very fertile source of buckles at or near the edges of solids and halftones, but the stereotyper, taking the blame upon himself for the fault, is accustomed to handling this sort of thing and makes every effort to get the buckles out of the mat, though this is almost an impossibility.

One fact emerges from this: It does not matter a great deal how high the cut is raised above type-high in the form provided it is not raised high enough to fracture the face. Some stereotypers raise the cuts 0.006 in., others go as far as 0.012 in. or more depending on the method and material used in molding. The best height for any stereotyping must be found by trial and error. Experience indicates that as more material is used on the back of the mat in molding, the cuts have to be raised higher in the form and the depth of the impression of the entire form becomes less uniform, and the less material used the lower the cuts need to be, *i.e.*, the nearer approach to a solid backing the more uniform the result.

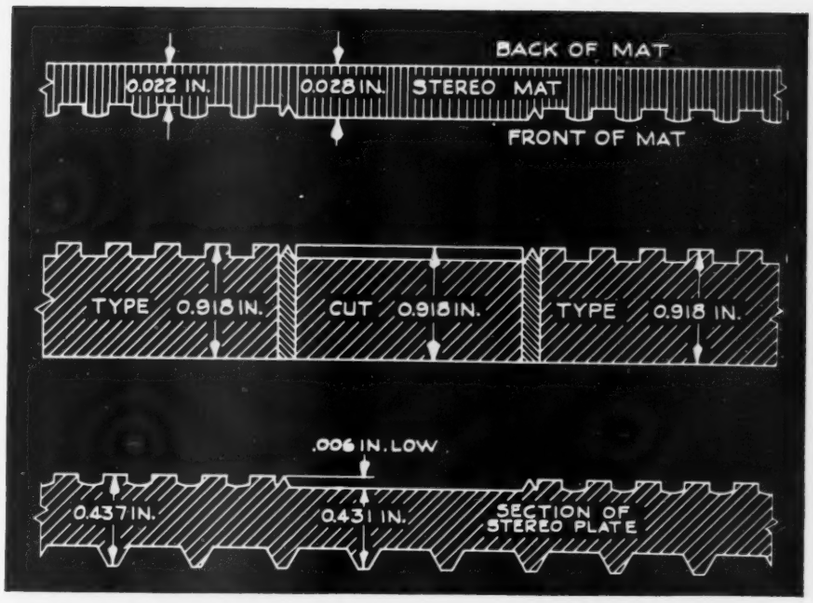


Fig. 2—In this diagram are shown: At center, cross-section of a form; the type is 0.918 in. high and the cut on its metal base is also 0.918 in. high. At the top is cross-section of a stereotype mat molded from the form shown in the center. The molding operation compresses the mat so that it is 0.022 in. thick where the type has been impressed into the mat. The cross-section of the halftone, however, is 0.028 in. thick. The mat on a large halftone, or solid cut, cannot "flow" or ooze out except at the edges under molding pressure, and it must be thicker on the face of the cut than it is on the other form elements where it can flow out between the characters. In the lower part of the diagram is shown cross-section of a stereotype plate cast from the mat (top) which was molded from the type form (center). Because of the limit of compressibility of the mat over halftone or solid form areas, as is explained in the paragraph above, the halftone area of the plate casts with a low-to-paper height in relation to the type matter areas in the same plate.

What Takes Place Under the Molding Roller?

There is a tendency for some stereotypers to use mats only 0.027 in. thick. No real reason is given for this except that the mat will hug the concave surface of the casting box a little better as it is a little more pliable. However, let us take a mat 0.032 in. thick and see what happens when it is molded by cork alone, no creeper, no steel plate, no board, no felt—just plain cork—using a mat having 20% moisture content which may be considered the saturation point of the fibers.

Compressibility of Type, Mat and Cork Under Molding Pressure

A molding cork 0.250 in. thick (¼ in.) was taken and the molding roller was raised above the bed of the molding machine 1 in. Leaving out of consideration any play in the bearings of the roller, this is what happened when a mat was molded under these conditions:

Test Table*

Before Molding		During Molding of Type		During Molding of a Cut Raised 0.015 in. Above Type-high	
Type	0.918 in.	Type	0.918 in.	Cut	0.933 in.
Mat	0.032 in.	Mat	0.022 in.	Mat	0.026 in.
Cork	0.250 in.	Cork	0.060 in.	Cork	0.041 in.
(A)	1.200 in.	(B)	1.000 in.	(C)	1.000 in.

* *See explanatory note on page 58*

It will be seen from the above table that the cork is not subjected to so severe strain at (B) while molding type as it is at (C) while molding a cut. At (B) the cork is compressed to approximately ¼ of its bulk or a little less than 1/16 in., but at (C) it is compressed to less than ⅛ of its bulk or less than 3/64 in. This is owing to the fact that the mat oozes out between the characters and letters in (B) and the type really goes deeper into the mat than the cut at (C). This oozing cannot take place on the cut, consequently the mat is thicker over the cut so the cork must be compressed more.

The severe strain the cork is subjected to when molding a cut that is raised above type-high in the form is, to say the least of it, very remarkable. If the cork is not heated to blood heat it will very soon deteriorate by cracking. If the temperature of the cork is kept about 100 deg. F. each cork will mold easily 700 to 1000 mats. Therefore, the cost per mat for molding cork is very small.

The fact that a halftone can never be cast as high as the type that surrounds it, induces many pressmen to underlay the plate on the press. This often raises the surrounding type up too high (unless the underlay is kept *well* within the border of the cut) and makes the printing unsightly, especially on a long run, leaving the ghost in the blanket for tomorrow. While underlaying has been found helpful, the writer considers it unnecessary as other things have been brought into play to make it so.

It has been shown that it is impossible for the stereotyper to make a plate that is perfectly level or have a precision finish so far as the height-to-paper is concerned. What, then, can be done to get better printing on our daily papers with the plates we are getting?

Makeready and Underlays

It is quite possible to put some makeready on the back of the mat to reduce the high

(*Continued on Page 58*)

Graphic Arts W

A NUMBER of the exhibitors at the National Graphic Arts Exposition, to be held at Grand Central Palace, New York, September 25 to October 7, have sent brief descriptions of their exhibits for publication in *Printing* EQUIPMENT *Engineer.*

We are publishing the condensed word picture of each exhibit for the benefit of those who cannot attend the Exposition as well as for those who do attend the Exposition and may wish to look at one or more of the Word Exhibits for reference purposes.

All of the exhibitors will have executive and representative attendance at their displays throughout the Exposition. All of them welcome visitors to stop in and see the latest printing equipment and supplies developments and to get acquainted. In many of the booths, resting facilities will be provided.

American Type Founders, Inc.

The high-lights of the ATF display will be the new Kelly "Clipper" and a Webendorfer newspaper press actually turning out an offset newspaper.

The exhibition area will be divided into several sections. In the Kelly Press Division, in addition to the "Clipper" there will be shown the No. 1 Kelly, No. 2 Kelly and the 17x22 Kelly and the "Little Giant."

The complete Webendorfer line will be on display. A complete offset plate-making unit, including cameras, dark room, vacuum printing frame, stripping and opaquing table and other necessary equipment may be inspected.

The ATF Precision Rubber Plate Machine will make plates to be used in printing on several presses.

In the Type Division, typographic experts will prepare original layouts demonstrating ATF type faces.

ATF will have also special displays covering its activities in the field of education, its engineering facilities and a department devoted to the export trade. Visitors will be given an opportunity to visit the ATF plant in Elizabeth and the ATF Library and Museum.

American Wood Type Mfg. Co.

Will show Thompson Cabinet Co. line of printers' cabinets. C. B. Nelson & Co.'s Cost Cutter Saws, stereotype equipment by Nolan Machinery Corp., and a complete line of American Wood Type products, including new plastic wood type and printing materials.

B. H. Bunn Co.

New Manual-Cross-Tie model and several other late-style machines, for tying booklets, circulars, forms, magazines, labels, mail and other printed matter, will be displayed.

Brandtjen & Kluge, Inc.

An operating display of five presses: 12x18 6-roller, 12x18 4-roller (with short jogger), 10x15 6-roller, 10x15 4-roller (with short jogger), and their new press, which will be a 12x18 Kluge "AP" (All-Purpose) Press, are the features.

View of Kluge "AP" 12x18 press unit.

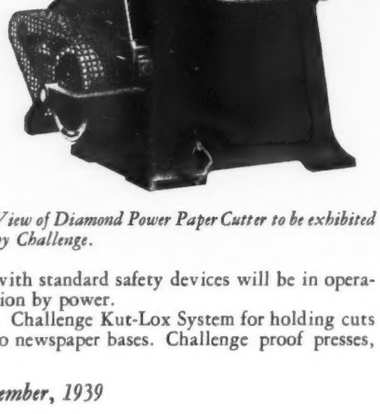
Canada Printing Ink Co.

Identified with the National Association of Printing Ink Makers is Canada Printing Ink Company, Ltd., Toronto. While not displaying company products in an individual booth, nevertheless personnel representing the company will be in attendance at the Exposition.

Challenge Machinery Co.

The exhibit includes the complete line of Challenge Paper Drilling Machines, hand lever, foot-power and hydraulic models, including the full range of accessories.

Diamond Power Paper Cutter, equipped with standard safety devices will be in operation by power.



View of Diamond Power Paper Cutter to be exhibited by Challenge.

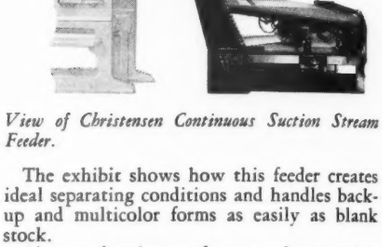
Challenge Kut-Lox System for holding cuts to newspaper bases. Challenge proof presses, ink distributors, labor-saving and also mammoth iron furniture and world-wide favorite, Challenge hi-speed quoins, will be exhibited.

Centre Trucking Co.

Has booth in Show. Is moving all equipment to Show and erecting the equipment on contract. Operates in New York metropolitan area.

Christensen Machine Co.

Action is the keynote for the Christensen exhibit in Spaces 253-254 at the Graphic Arts Exposition, according to officials of the Christensen Machine Company. Shown for the first time, in actual operation, is the new Christensen Continuous Suction Stream Feeder, which, according to the makers, combines the best features of both Pile Suction and Continuous Type feeders.



View of Christensen Continuous Suction Stream Feeder.

The exhibit shows how this feeder creates ideal separating conditions and handles backup and multicolor forms as easily as blank stock.

Also performing under actual operating conditions are the Christensen High Speed Bronzer, which dusts both sides of the sheet under gripper control—and the Christensen Multiple-Head Gathering and Stitching Machine, combining inserting and stitching in one operation, and running at speeds up to 9000 operations per hour. Demonstrations will show how it is easily and quickly adjusted to handle long runs or small jobs profitably.

Chandler & Price Co.

The display of The Chandler & Price Company will involve the shipment of a carload of C&P equipment. All Chandler & Price power-driven machinery will be in operation. Included in the display will be two new presses and a new cutter shown for the first time.

A feature of the exhibit is a prize contest for the naming of one of the new presses. For the most suitable name suggested, a substantial reward will be paid. Chandler & Price executives say there are no strings to the contest—any visitor may submit his suggested name on a blank that will be provided at the C&P booth.

Craftint Mfg. Co.

Will exhibit Washtone, along with the other Craftint mediums. Washtone for combination highlight halftone effects without the halftone engraving process.

rts Word Exhibit

The Commercial Investment Trust Incorporated

The Commercial Investment Trust Incorporated Exhibit in Booth 256 symbolizes the adaptability of the C. I. T. Equipment Funding Plan and its usage in the printing industry.

C. I. T.'s exhibit consists of two display pieces. In the center of the space will be erected a slowly revolving column, five feet in diameter, covered with a photomontage of printing machinery and equipment.

At the end of the booth is a long display piece with the large cut-out letters, C. I. T., lighted from below, emblematical of this Company's service in the Graphic Arts field. The top of this display piece bears the legend, "Over 12 millions of printing equipment financing since 1931," also in cut-out letters.

C. B. Cottrell & Sons Co.

Products manufactured in the Claybourn Division at Milwaukee will be exhibited by C. B. Cottrell & Sons Co. At the time of going to press, the specific items to be exhibited had not been received by *Printing* EQUIPMENT *Engineer*.

Craftsman Line-Up Table Corp.

The new Craftsman Precision Offset Table will be shown the trade for the first time. Also on display are the Craftsman Geared Line-Up and Register Table and the Craftsman Precision 2-Way Form Liner.

Dayton Rubber Mfg. Co.

Dayco rollers will be highly dramatized in a unique manner.

Dexter Folder Co.

In operation in the Dexter Folder Co. booth will be new model Double-M Cleveland Folder with Continuous Feeder, Model W Cleveland Folder, Model "A" Brackett Safety Trimmer and latest type Boston Stitchers. In other parts of the show the latest types of Dexter feeders will be attached to press equipment.

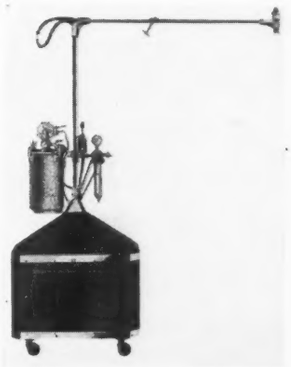
Eastern Roller Manufacturers Group

Eastern Roller Manufacturers Group, collectively, will exhibit at the National Graphic Arts Exposition. Members of this group are Bingham Bros., Godfrey Roller Co., Harrigan Roller Co., O. J. Maigne, National Roller Co., Osgood Globe Corp., Frank A. Reppenhagen and Wild & Stevens.

Embossograph Process Co., Inc.

Will have a press operating in connection with one of its "Cascade" Automatics producing 100% permanent work, and also a hand-operated machine. Visitors will be presented with plenty of hammers to test the flexibility and permanency of embossography raised printing at its best.

DeVilbiss Co.



DeVilbiss pressure feed, compressor type spray equipment.

Ten outfits representing the complete DeVilbiss line of spray equipment will be on display, including the portable type.

Federated Metals Division (American Smelting and Refining Co.)

Federated Metals Division, American Smelting and Refining Co., will have its exhibit in space 255A on the mezzanine floor during the entire two weeks of the National Graphic Arts Exposition at Grand Central Palace. All metals allied with the printing industry will be exhibited with modernistic surroundings. Decorative plans will be in keeping with the color trend of the exposition.

Wm. A. Force & Co.

The Force booth will be built around the theme, "Star Performers." Included is the complete line of numbering machines for use on platen, cylinder and rotary presses, not only the standard models but a great variety of special designs built for individual customers to specifications or highly individualized jobs.

General Printing Ink Corp.

The Rutherford Machinery Co., Div. General Printing Ink Corp., will have in operation a Rutherford Photo-Lettering Machine and will also feature a new development in the offset prevention field, the Craig DriSpray, which sprays a dry powder (special powder).

Hammond Machinery Builders

Hammond Machinery Builders will have on exhibit at the National Graphic Arts Exposition several machines. All of the machines with the exception of the EasyKasters will be in actual operation.

At Hammond's exhibit will be two models of EasyKasters with self-contained metal pot for casting stereotype plates. Two models of routers will be demonstrated. Four models of composing room saws, including the company's latest Mercury TrimOsaw will be shown. In this new model, company states, are incorporated many of the Hammond Glider's features. The new saw is in the medium price field.

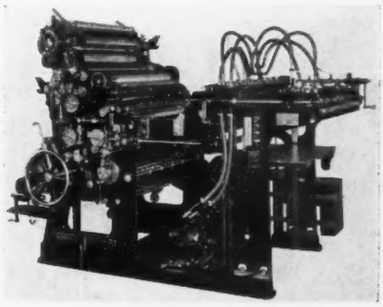
Hamilton Mfg. Co.

Will be showing a complete line of modern cost-cutting composing room type cabinets, composing tables, cut cabinets, ink and roller cabinets and work benches. In addition there will be a demonstration of the manufacture of wood type and samples will be distributed as souvenirs, by the operator of the pantograph type-cutting machine.

Harris, Seybold, Potter Co.

Two Harris offset presses will be in operation, the single-color 21x28 Harris LSN and the 26x40 two-color Harris LSR, the latter one of the latest developments in the Harris line.

The Seybold Division will display the Seybold Precision Automatic Clamp Paper Cutter,



View of Harris LSN 21x28 ' color Offset Press

demonstrating the electric spacer, the quick-space mechanism and the power back gage, a single-head round corner cutter, single and multiple spindle drills and a Seybold Morrison wire stitcher.

The Harris Chemical Division will display chemicals which Harris Seybold Potter Co. has developed for the lithographic industry.

H. H. Heinrich, Inc.

View of Heinrich 24 in. by 24 in. Vulcanizer for making rubber printing plates.

A Precision Rubber Printing Plate Equipment will be exhibited.

R. Hoe & Co.

A display of enlarged photographs showing the Hoe single and two-color metal decorating offset press; single and four-color super-offset press and the company's latest achievement, the Hoe super-production web perfecting offset press.

Graphic Arts Word Exhibit (*Continued*)

Intertype Corporation

Intertype Corporation will exhibit one of its latest streamlined models. The machine will be in operation. Intertype's booth (No. 109) occupies a space 22 ft. by 28 ft. and is entered directly from the 46th street entrance. The major portion of the side wall is devoted to dramatizing features of Intertype equipment, including a silhouette reproduction of an Intertype. On a counter in the booth, visitors may obtain the answer to one or all of nine questions about nine questions related to the machine by touching a magic glass. When this is done a magic control system illuminates one of the transparencies spotted into the back wall of the booth. In addition, a large photograph of Intertype machines in a large composing room will be shown.

Kidder Press Co.

In the Kidder Press Co. exhibit is a display of the Chapman Electric Neutralizer and photographs of Kidder Wrapping Paper presses which turn out 90% of the bread wraps, the latest aniline presses, Golden Arrow bronzers, slitting and rewinding equipment, four-color roll feed 44x64 rotary press, printing at paper speed of 350 f.p.m., running label or board stock, from the roll, printing in accurate four-color register and delivering, cut off in varying sheet lengths, at a rate of 5000 i.p.h.

Kimble Electric Co.

The Kimble exhibit will be entirely non-technical but of great interest to users of electrical equipment.

Lanston Monotype Machine Co.

The exhibit in the Composing Room Equipment Division includes the Monotype typesetting machine, type and rule caster, material-making machine, giant caster and Monotype-Thompson type caster. In the Plate Making Equipment Division are included the M-H overhead motor focusing camera, M-H vertical photo-composing machine, M-H hi-speed negative holder and universal register device, M-H universal process machine, M-H vertical plate-coating machine, M-D all-metal precision camera, and M-H photo-imposing system.

Lester & Wasley Co., Inc.

This display includes the late model bench deckling machine and the rotary bench perforator.

The Linotype Parts Co.

The Linotype Parts Company will exhibit at its booth a new electric self-contained metal pot, embodying a new principle of construction for line-casting machines; Star self-actuating automatic metal feeder; display stand showing Star parts for line-composing machines; Duex automatic spaceband wiper, and Joseph Dixon Crucible Company's products for use in the composing room.

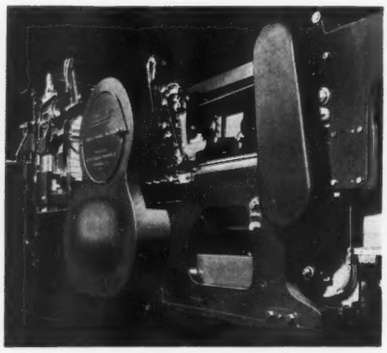
Ludlow Typograph Co.

In the Ludlow list of products to be shown are the Ludlow all-slug system designed for the hand compositor, including universal steel matrix cabinet, self-centering and self-quadding matrix sticks, Ludlow supersurfacer, Ludlow shell-hi slug shear, Elrod strip caster.

The exhibit will feature Ludlow and Elrod equipments in operation and showings of the Ludlow supersurfacer and the Ludlow shell-hi slug shear.

Miller Printing Machinery Co.

The Miller Printing Machinery Company's exhibit will occupy a space in the center of the main floor extending to the main entrance. All of the latest Miller automatic printing

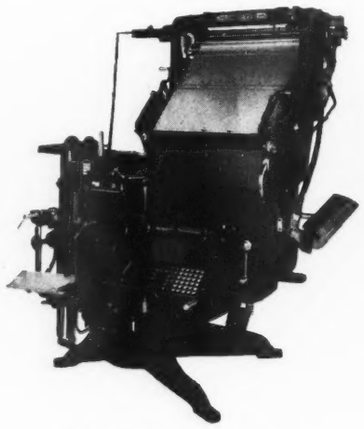


Gear side view of Miller Major Automatic Press

presses will be shown. In addition, the Miller Cutter and Creaser with Multi-Pile Delivery, Miller saw-trimmers and various other interesting displays will be exhibited.

Mergenthaler Linotype Co.

Working displays of various current models of the Blue Streak linotypes will feature the exhibit. The newest will be the Two-in-One model 33. In addition there will be other



MLCo's Model 33 Display Linotype

models of equipment items, attachments, etc., all constituting an oasis to which many printers will doubtless gravitate.

Miehle Printing Press & Mfg. Co.

Included in the Miehle exhibit will be two Verticals, one Horizontal, one No. 41 two-color unit (Dexter stream feeder), one No. 56 single color unit (Dexter stream feeder), and one No. 44 single color gravure (Dexter stream feeder).

All Mechanical and Production Executives are welcome at P-Double-E's Booth.

National Association of Printing Ink Makers

In an artistically designed and restful setting to refreshen weary "conventioneers" will be shown a series of photo-murals featuring media. In this way will be presented the finished product produced by ink on paper and other surfaces, rather than ink itself alone. Included will be actual products besides the murals.

In one corner of the room will be presented a specially made color movie with sound by means of a Trans-Lux motion picture mechanism. The general outline of this color movie with sound effects will be as follows: A—Foreword; Part ink plays in merchandising. B—What is Ink? What is it made of? C—How ink is made, covering such points as (1) Color matching and weighing, (2) Weighing a batch, (3) Mixing a batch, (4) Grinding, (5) Checking and (6) Tests.

A booklet telling the story and the background of ink will be given away and it should be useful to printers since it will convey important technical information.

Paasche Airbrush Co.

This will be the first public showing of the Paasche latest and most complete line of fully air-operated "No-Offset" units, in which are incorporated many advanced operating features, although several hundred of these units have been in operation during the past year.

Printing Machinery Co.

In addition to showing the complete line of PMC metal bases, including the Sterling Toggle Hook and Semi Steel Base System, PMC Warnock Malleable Iron Diagonal Block and Register Hook System, Sterling Small Sectional System and Sterling Expansionable Book Block System there will be introduced the Sterling Sheet Register Gauge or PMC Warnock Sheet Register Gauge, depending on the system with which it is used. In addition will be shown the Sterling Plate Correcting machine, miniature grooved cylinders, PMC aluminum alloy metal furniture and PMC Sterling adjustable register nuts.

Rapid Roller Co.

Rapid Roller Co. exhibit includes unusual lithographic posters on cloth, a roller-testing machine in actual demonstration, showing how Rapid rollers are tested, a series of photographic transparencies in color on glass graphically displaying the manufacturing of Rapid Roller Co. products.

At the entrance will be a little figure perched on a pedestal, a dummy laughing man who will chuckle all day long at the spectators who march down the aisle. He is one of the drollest little figures you have seen. His movements are lifelike and vigorous. Especially inported from France.

The complete Rapid Roller line will be displayed.

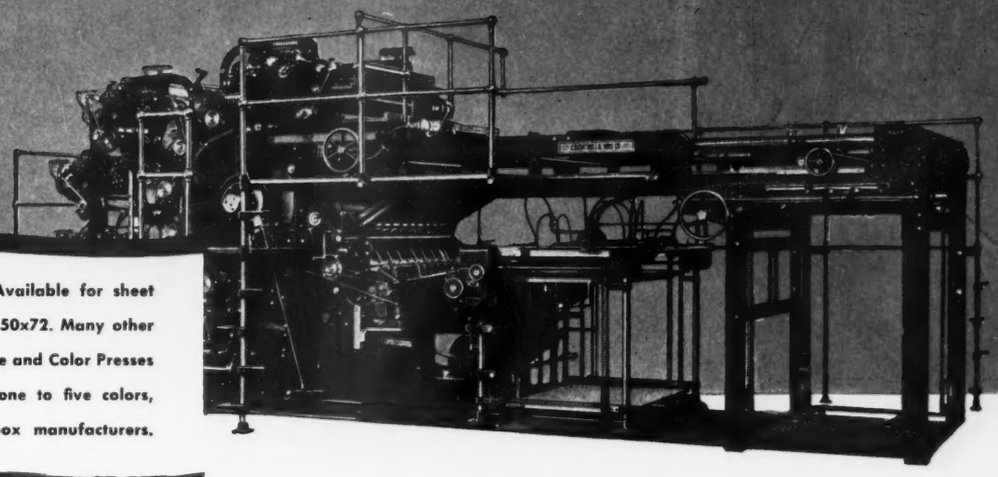
J. A. Richards Co.

In Booth No. 286-A, The J. A. Richards Company, will display among other of its machines, the new Super "Clipper" Fleetwing Gliding Table Saw-Trimmer, adaptable to large composing rooms, stereotype rooms, or as a precision diemaker. Other new machines will be a new model bridging machine, Richards' electro-sealer for sealing steel rule joints, new model steel rule punch maker, and a new die room grinding unit. Other machines for the composing room will be shown.

Multiform Diemaking Equipment for steel rule dies used in the manufacture of greeting cards, display advertising, paper boxes, and die-cut products of all kinds will be exhibited.

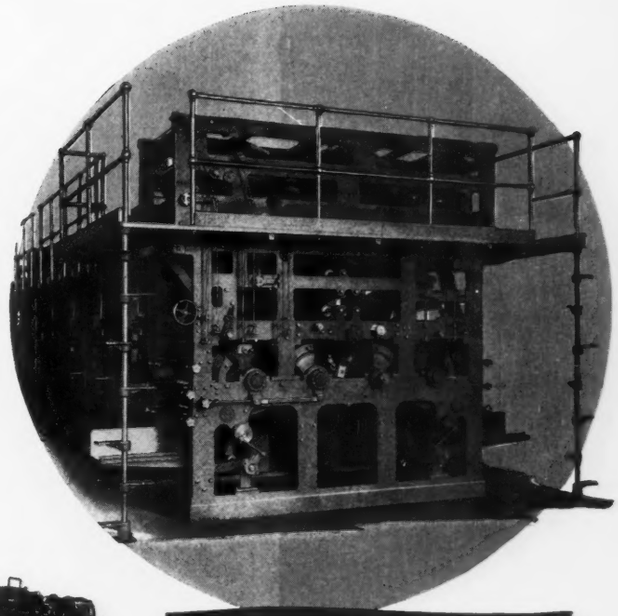
The Display will be in charge of J. A. Richards and one of his five sons.

Cottrell Contributions to the 1939 Graphic Arts Industry

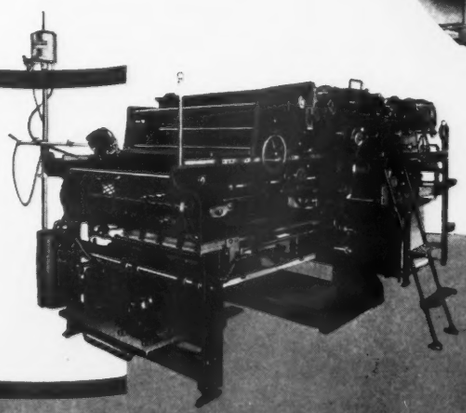


Cottrell Five-Color Rotary Press. Available for sheet sizes of 25x38, 32x45, 38x50, and 50x72. Many other types and sizes of Cottrell Magazine and Color Presses are available, for printing from one to five colors, including equipment for paper box manufacturers.

For many years the name COTTRELL has stood for the best in magazine and color printing. Today this name means more to more different kinds of printers than ever before, because in recent years Cottrell has added new types of presses to its well-known line. Three of these latest contributions to the graphic arts world of today—and tomorrow—are illustrated on this page . . . a typical Cottrell Five-Color Magazine Press, a Cottrell Six-Color Rotogravure Press, and the Cottrell Claybourn Two-Color Rotary. All of these units are demonstrating—in different fields—the profit-earning capacity which is characteristic of all Cottrell constructions.



Folder end of Cottrell Rotogravure Press This particular press prints two colors first side and four colors second side, at 15,000 cylinder revolutions an hour. It is used in the production of two leading national magazines.



Cottrell Claybourn Two-Color Rotary Press. Made in three sizes, for maximum sheets of 29¼x28, 29¼x45, and 36x48, respectively. Spray mechanism shown at left is extra equipment. The introduction of this machine brings rotary press speed and economy within the reach of the average printer.

Cottrell

R. HOE & CO., NEW YORK
R. B. COTTRELL & SONS CO., WESTERLY, R. I.
NEW YORK: 25 East 26th Street · CHICAGO: 332 South Michigan Avenue
CLAYBOURN DIVISION: 3713 N. Humboldt Ave., MILWAUKEE, WIS.
SMYTH-HORNE, Ltd., 1-3, Baldwins Pl., Gray's Inn Road, LONDON, E. C. 1

Graphic Arts Word Exhibit (Continued)

F. P. Rosback Co.

Practically the entire Rosback line will be displayed, including the Rosback Pony Rotary Perforator, Rosback Power and Foot Power Hi-Pro Paper Drilling and Slotting machines, Rosback Single Head Stitcher and Feeder with Multiple Stations and the Rosback Multiple Punching machine for modern bindings.

H. B. Rouse & Co.

At the H. B. Rouse & Company booths there will be continuous demonstrations of equipment. Of prime interest to the smaller printer is the Economy Model Rouse Vertical Rotary Miterer. This machine has a speed of seven hundred miters an hour.

A new model of the Vertical Rotary Miterer, which will miter material up to 36 points in thickness, will also be shown. The most recent Rouse development will be a new Cabinet Model Band Saw. The Rouse Plate Mortiser Equipment, which is used for making changes and corrections on stereotypes and electrotypes, will be demonstrated.

Many other Rouse items and methods of operation will be shown.

United American Metals Corp.

A remelt type metal furnace will be a feature in the exhibit of the United American Metals Corp'n at the National Graphic Arts Exposition. This furnace is said to be unique in that it has a volume capacity of 245 lbs. of slugs and is claimed to have a remelt capacity equal to that of the conventional 3000 lb. capacity furnace. It occupies 6 sq. ft. floor space and may be operated in the composing room. Another feature in operation is a type metal feeder operating on a continuous chain. This feeder is self-actuating, that is, it does not depend for its action on the operation of the machine.

Molds to cast the double-ear Slip-off ingot which drops off the hook automatically when the ingot has melted down to 3 in. will be shown.

Wood, Nathan & Virkus, Inc.

The Domore Automatic Process Embosser coupled with a Webendorfer Little Giant Cylinder Press will be shown in actual production work.

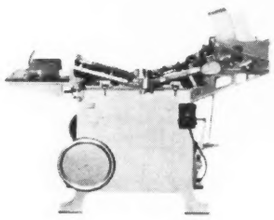
Vandercook & Sons

Representative equipment for every proving and premakeready requirement is included: the No. 4T Vandercook Proving Machine for making Transparent Impressions will be demonstrated. Other equipment will be demonstrated such as the No. 317 Vandercook Power Proof Press and the faster No. 22 and No. 23; the newest No. 1 for the smaller printer; the No. 325-G for large proofs, equipped with slitter and split fountain, for proving two tabloid newspaper pages or two magazine pages at a single impression, the sheet being slit and delivered as two separate proofs; the No. 223P for photoengravers and printers requiring fine color proofs, equipped for printing two colors in one impression.

For premakeready the No. 9 Hacker Plate Gage and the No. 4 Hacker Block Leveller will be shown.

B. Verner & Co.

The Multipress, equipped with Knudsen continuous feeder, flatbed and cylinder construction permitting the use of standard type and flat plates, and running at 6500 i.p.h., will be demonstrated.



Yale & Towne Mfg. Co.

In its booth at the National Graphic Arts Exposition, The Yale & Towne Mfg. Co. will exhibit and demonstrate a Cable King Wire Rope Hoist on an 8 ft. I-Beam, Trolley Block and Hand Hoist and Pull Lift on Whiz Trolley; a Blue Streak Hand Lift Truck, a Multi-Stroke (enclosed head) Hand Lift Truck with Skid and the Easy Lift Rollaway Jack and Skid.

U.S. Will Adopt the Metric System

By W. F. Schaphorst, M. E.

THERE is no question in this writer's mind but that the United States will some day adopt the metric system. The handwriting is on the wall. Every country of any importance in the world has already accepted it—all but the United States and Great Britain. The "transition period" from our present standard to metric will no doubt cause much expense and inconvenience but the sooner we jump in and have it over with the better.

It is not commonly known that the famous James Watt, an English engineer and scientist, originated the decimal system of measurement. I have always considered it of French or German origin myself, but that is not so. Nor is it well known that our present "English system" is of German origin. We therefore have this interesting situation:—the English speaking people are clinging to a German invention, which the Germans themselves have dropped, and the balance of the world are using an English invention.

The simplest way that I know, to remember the relation between all of the units in the two systems, is the following:

English				*Metric*
Length—One yard	plus	10%	equal	One meter
Weight—Two pounds	plus	10%	equal	One Kilogram
Volume—One Quart	plus	5%	equal	One liter

Concentrate on this little easily remembered table for a few minutes. You add 10% in each case excepting "liquid measure" and there you add 5%. Associate "liquid" with the old pre war beer at 5c per glass and you'll never forget it. The 5%, you see, applies only to "liquid" measure. Easy, isn't it?

Printing Industry Week

BECAUSE it is representative of almost the entire printing industry, National Graphic Arts Expositions, Inc., initiated the movement for nation wide observance of Printing Industry Week, September 25 to 30 inclusive. In addition to promoting observance of the week among all branches of the industry, governors of all states have been asked to cooperate by issuing executive orders designating these dates as Printing Industry Week.

Letters have been sent to every printing establishment in the country, requesting that they hold Open House during the week so that customers and potential buyers of printing may visit their plants and get a better idea of how printing is done and what it can accomplish. Generous mailings during the week, using a special commemorative stamp, will be urged upon all persons connected with the Graphic Arts.

The celebration is timed to coincide with the issuance, on September 25th, of a special 3-cent postage stamp commemorating the three-hundredth anniversary of the introduction of printing into the American colonies.

It is expected that the original issue of 65,000,000 stamps will be exhausted by the immediate demands of the Graphic Arts Industry. Since re-issues of designs of U. S. postage stamps are made as long as the demand continues, it is expected that the members of the Graphic Arts industry in ordering stamps for future mailings will continue to specify the special commemorative stamp, and, in this way, conduct a sustained promotional campaign in behalf of their industry, as well as to make the stamp a permanent one.

A striking poster featuring Printing Industry Week, Commemorating 300 Years of Progress of the Printing Industry in the United States has been printed and copies have been sent to every printing plant in the country. In this mailing will also be an article dealing with the Stephen Daye Press, the first press in the American colonies to produce printing; and other statistical and historical information about the printing industry.

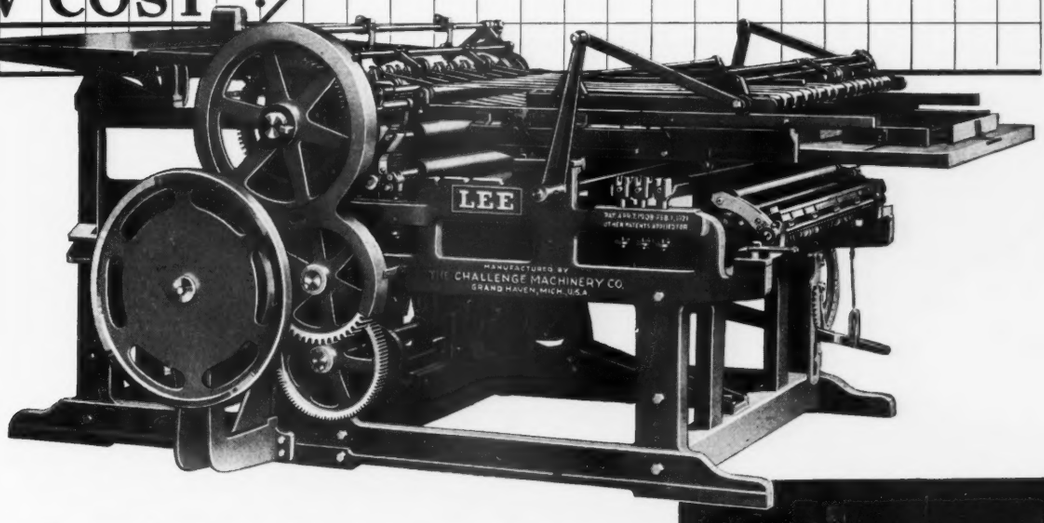
It is expected to obtain permission from the Vermont Historical Society to have the Stephen Daye press sent to New York City for the duration of the National Graphic Arts Exposition.

Huber Representative Changes

A. J. Cooper has joined the sales force of J. M. Huber, Inc., Chicago, and will represent the company in Minnesota, Iowa and Nebraska. After several years of actual pressroom experience he represented the Goss Printing Press Company, both in sales and service, and was later associated with a printing roller manufacturer.

Roger S. Gallup who has represented the Huber Chicago branch for many years, has been assigned to a territory which requires less traveling in the state of Indiana and part of Ohio and Kentucky.

LOW COST ...HIGH QUALITY PRINTING



Lee Two-Revolution Cylinder Press

With this press, you can talk price and quality in the same breath. You can give your customers the finest printing at a close, competitive figure and still show a good profit.

The Lee Two-Revolution Press will handle a wide range of work at minimum cost for both original investment and operating expense . . . all kinds of commercial, book, newspaper, and color work from a single letterhead up to a 24x36 or 26x40-inch sheet, according to the size of the press. The Lee is noted for its strong, unyielding impression and perfect register. Outstanding features include rack-and-screw and table distribution, two form rollers and one rider roller (interchangeable), impression trip, brake, counter, jogger, and many others.

The Lee is made in two sizes: No. 38—bed size, 26x38 inches, fly or carrier delivery; and No. 42—bed size, 29x42 inches, carrier delivery only. The larger size produces 2,000 impressions per hour; the smaller, 2,500.

Investigate the superior features of this low-cost economical press. Learn how and why it has been such an outstanding money-maker for so many printer-publishers all over the world. Write for full details and prices.

● Micrometer adjustments on form rollers permit hairline accuracy and easily contribute to production of clean, sharp printing impressions.

● Feed-board opens away from the cylinder, leaving entire cylinder accessible and facilitating quick, easy make-ready.

★

THE CHALLENGE MACHINERY CO.

GRAND HAVEN, MICHIGAN

CHICAGO, 17-19 E. Hubbard Street — 200 Hudson Street, NEW YORK

Challenge

1297

See the CHALLENGE Exhibit at the Graphic Arts Exposition, NEW YORK, September 25 — October 7

Hard Packing

(*Continued from Page 51*)

edges. This has to be done sometimes with leaders, rules and high edges of vignettes. It might also be possible to bring up the low cuts by having on the back of the mat a sheet of paper, made of the same material as the mat, about 0.005 in. thick which could be removed or peeled off the back of the cut. This would thin the mat over the cut and bring it up in the cast nearer the height of the type. If this could be done, then less impression would need to be carried to print. This procedure, however, might necessitate the taking of a proof from the first cast from the mat so treated just to see if the makeready was all OK. Magazine and color sections, where there is less rush than on daily papers, would possibly find this no serious handicap, but on daily papers it is out of the question as there is no time for makeready and pulling proofs.

"Progressive" Impression Adjustment

If the press is clothed with relatively hard packing, *i.e.*, packing that is composed of hard cork alone or hard cork and hard rubber without any felt blankets, it is usually found that after a short time of running more impression has to be used day after day to get rid of the ghosts of yesterday's paper, each day getting worse until there are so many ghosts on the packing that it has to be discarded. Packing of this type after a short time invariably begins to show streaks of high and low printing across the sheet when the speed is increased over 300 revolutions. The coated felt blanket, with a rather springy, resilient cork or rubber underpacking has been used successfully by the writer. Hard cork and hard rubber with little or no resiliency does not answer quite as well.

How Press Prints From Uneven Surfaces

It is really astonishing how any packing can print satisfactorily when the plates are so uneven and the halftones cannot be brought nearer the paper level than 0.005 in.

The following is one answer to this puzzling question: All newspaper press impression cylinders are overpacked, that is, the packing is considerably above the theoretical pitch line of the cylinders. There is a limit to this overpacking and the harder the packing the less the overpacking may be, and often with soft packing 0.005 in. or 0.010 in. can be taken off with advantage. Low cuts in the plates can only be printed when the packing is resilient enought to billow, swell or wave out in front of the impression, this billowing causes the blanket to dip deep enough into the low cut on the plate to print well if the ink is easily transferred from the plate to the paper. Should the ink be sluggish or very viscid, the printing will be muddy looking, and if the blankets are too hard and non-resilient and overpacked too much, then at high speed there will be streaks of high and low printing *and all cuts will appear low.*

How can the ink be made to transfer easily from the plate to the paper? Remember the halftones are getting 0.005 in. less impression both from the blanket and the roller that inks it.

Heating Ink to Decrease Viscidity

Suppose a very rough board has to be painted, say with a good black paint that is rather thick and viscid. Try to spread this paint on the board with a brush. It cannot be done uniformly or smoothly, even with a rather stiff brush, it goes on in thick layers and a lot of paint is used to get the board covered. There are two things to do to get the board painted nicely; first, the paint can be thinned down with turpentine so that it will spread easily; if this is done the density of the paint is reduced and the finished work will be many shades lighter than expected; second, the paint may be heated; that will make it less viscid and permit it to spread very readily on the rough board. That is what is done with the ink; heat is applied to it and it passes through the fountain hot. There is no need to go into the reasons why the heating of the ink was started, interesting though that may be, but at the present time, (heat has been used on the ink for three years) two kinds of heaters are in use. One an independent (automatic) heater for a single fountain box (Hoe Pump Fountain) and the other a heater that heats a whole tank of 1600 gal. It was found that when the temperature of the ink was raised to 110 deg. F. or more, in the fountain box, there was an increased brightness and coverage, more especially on the halftones and solids, while at the same time the type printed clearer and sharper, incidentally too the *halftones no longer appeared low.*

The ink, of course, never reached the paper at the above temperature as it had to go through the pumps and the tubes ere it reached the ink cylinder and the paper, but the ink when applied is warmer than the cold ink under the same circumstances.

Increasing Ink Density

After the first experiment with hot ink, the percentage of carbon black was increased gradually, until it is now nearly 50% more than it was formerly. This permitted 50% more carbon particles to be put on a given spot, consequently, the printing looked blacker and sharper. The ink consumption dropped from 33.6 lb. to 31.1 lb. per ton of paper printed and there is a possibility this can be reduced still further with the addition of more carbon and the application of heat to the ink tubes so that the ink will be hot when applied to the paper.

As the percentage of the carbon in the ink is increased the oil percentage is reduced. This is an important factor in the prevention of show-through.

Advantages Secured from Heated Ink

The saving in the consumption of ink is a minor matter, a mere detail, and other results of far greater importance and interest to the pressman were obtained. Less impression was required, and the ink transferred from the plate to the paper far more easily. At each revolution of the press all the carbon is transferred to the paper leaving only a film of oil on the plate. This shows that the carbon has no tendency to fill up the cuts. There is no smudging on the idler rollers. They are as clean at the end of the run as they are at the beginning. The hot, or correctly speaking, the warm ink on the first impression enters the paper immediately, instantaneously in fact, so the set-off is practically non-existent.

All cuts are well inked, solid black, with perfect coverage. No cuts are underlaid on the press, yet there is no sign of the cuts appearing low. This is a very clear indica-

(* Explanatory Note—Page 51)

Some readers may be curious and desire to know how the figures in the above table were secured. The following is an explanation of the method:

It is rather difficult, though not impossible, to find out by direct measurement on the mat how deep the type goes into it. By this is meant, how near the back of the mat the type reaches. Direct measurement is not necessary as we can find out easily by indirect means.

Take a form of type containing a solid cut. Mount this cut exactly type high (0.918 in.) Mold the page in the usual way using a 0.032 in. thick mat. Scorch the mat and cast a plate from it. We measure the thickness of the plate over the type and the cut. We find the type stands 0.006 in. higher than the cut. That means the type has gone 0.006 in. deeper into the mat than the cut. We can measure the thickness of the mat over the cut easily. This we find to be 0.028 in., which means that the surface of the cut on the mat is 0.028 in. from the back of the mat and as the type has gone into the mat 0.006 in. deeper than the cut, the distance the type is from the back of the mat is 0.022 in. (See Fig. 2.)

Raise the cut 0.006 in. above type high (0.924 in.) by an underlay. Mold again and cast another plate. On this second plate we find that the type is only 0.005 in. above the level of the cut. We caliper the mat over the cut and find that it is 0.027 in. thick, that is, the face of the cut on the mat is 0.027 in. from the back of the mat. As the type stands 0.005 in. higher than the cut on the plate, we again find that the thickness of the mat over the type is 0.022 in.

Raise the cut with another underlay until it is 0.015 in. above type high (0.933 in.), then mold and cast another plate. This time when we measure the plate we find that the type is only 0.004 in. above the cut and in calipering the mat over the cut we find it is 0.026 in. thick, that is, the face of the cut on the mat is 0.026 in. from the back of the mat. As the type in this case goes only 0.004 in. deeper into the mat we find that the thickness of the mat over the type is again 0.022 in.

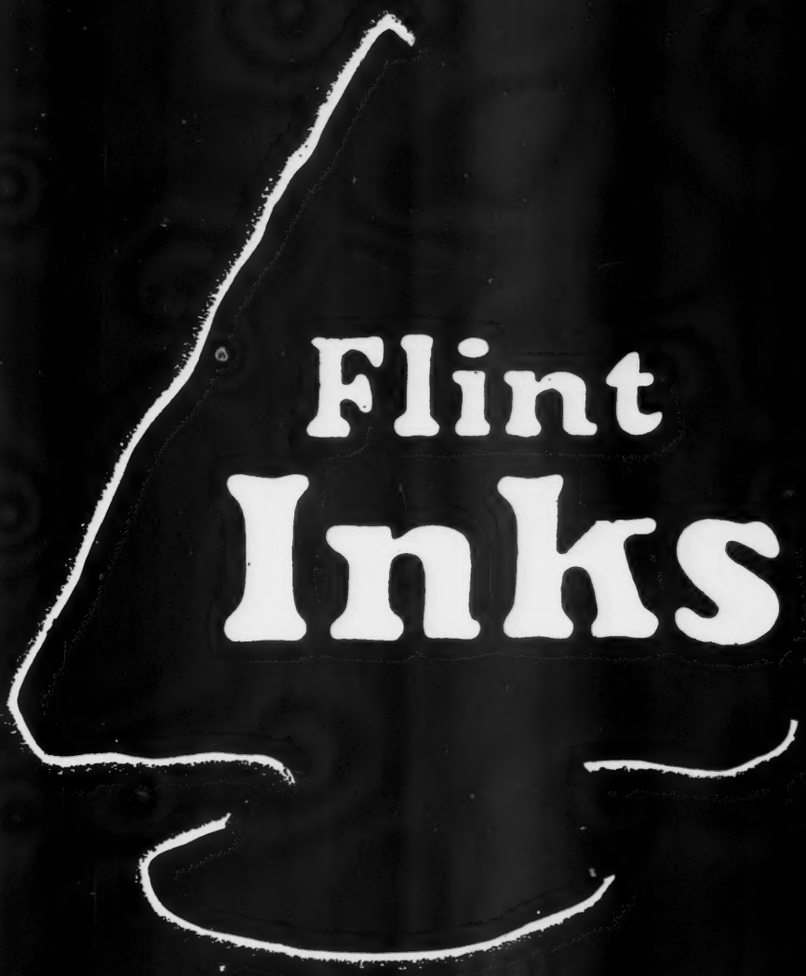
We come to the conclusion that as a general rule the type goes into the mat the same every time, the thickness of the mat over the type will always be 0.022 in. while the thickness of the mat over the cut will vary more or less with the amount of the underlay beneath it. The reason why the type goes so deeply into the mat is that the mat flows in between the characters and letters, while on the cut it cannot flow at all, except over the edges.

The molding roller is raised 1 in. above the bed of the molding machine and the type, cut, mat and cork have all to pass under it. It is a simple matter to find out how much the cork is compressed.

To illustrate, referring to the table:

	(B)
We know how high the type is...	0.918 in.
We know how much the mats compressed over the type	0.022 in.
Therefore, the cork must be compressed to	0.060 in.
As type, mat and cork all pass under the roller which is.....	1.000 in.
	(C)
We know how high the cut is when it is raised 0.015 in. above type high.....	0.933 in.
We know how much the mat is compressed over the cut.....	0.026 in.
Therefore, the cork is compressed to	0.041 in.
As type, mat and cork pass under the roller which is.....	1.000 in.

The cork which is ¼ in. thick (0.250 in.) is compressed at (C) to less than ⅙ of its bulk.



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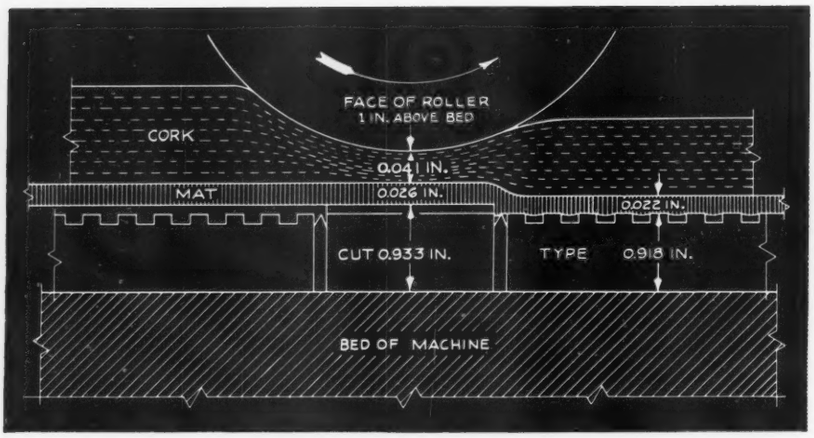

Fig. 3—Cross-section diagram illustrates a form on a mat roller before molding, during the molding operation, and after molding. In this instance, as is explained by Mr. Milne, a 0.032 in. thick mat of 20% moisture content was used. The molding roller was raised 1 in. above the bed. The halftone cut was mounted 0.015 in. above the type which was 0.918 in. high. A cork blanket (0.250 in. thick) only was used as the molding medium. At the moment of molding the cut remained 0.0933 in. high, the cork was compressed to 0.041 in., and the mat was brought down to 0.026 in. over the halftone area, while the printing face of the type matter compressed the mat to 0.022 in. The cork compressed to approximately ¼ of its bulk or a little less than 1/16 in. over the type matter, but over the cut it was compressed to less than 1/6 of its bulk or less than 3/64 in. This is by way of illustrating that mat flow or oozing cannot take place over the cut, consequently, the cork must compress to a greater extent than is the case at the moment of molding type matter.

tion that under ordinary circumstances more impression is carried than is actually necessary. If the halftones which are 0.005 in. low can be printed perfectly, then, *ipso facto*, too much impression is being carried on the type matter.

The middletones in the cuts are printed better, as less impression and less ink is required than formerly and these intermediate tones are not clogged up with sluggish ink. There is no tendency for the carbon in the ink to pile up on the cuts as the viscosity of the ink is very low. The newsprint is well under standard weight yet the show-through is almost eliminated except when there is a very black cut on the wire side of the paper.

When the ink is heated it becomes less viscuous and flows more readily with the result that less pressure is required to force the ink from the tank to the fountain, but there is no indication that the heating of the ink causes a separation or precipitation of carbon, and an examination of the pipe lines does not disclose that any undue settlement of carbon takes place. The carbon content has not been increased to the extent that there is trouble at the start of the run with cold ink. The quality of the printing, however, improves as the warm ink is fed to the cylinders. While it is a known fact that no press prints as well at the start as later on in the run, the improvement obtained by heating the ink is materially greater than is normally experienced without heating.

Halftone Height-to-Paper

Seeing it is impossible to get a stereo plate that is precision perfect as far as the height to paper is concerned, the question arises: Is it necessary or even desirable to have all halftones exactly the same height to paper as the type on the plate?

Compensating for Centrifugal Force

While the writer feels that it is not necessary, obviously it would be desirable to have a perfectly uniform printing surface on the plate as this would permit reducing the overpacking on the impression cylinders and enable operating at a more nearly uniform surface speed on the plate and impression cylinders. To the writer's knowledge, however, no practical and quick means has yet been found for producing a plate with a uniform surface for daily newspaper work, and, as long as the surface of the plate varies as much as from 0.003 in. to 0.007 in. in height-to-paper, overpacking of the impression cylinders with relatively soft packing obviously will be necessary. Furthermore, there is a definite limitation to the degree of hardness which might be employed in the packing as it is absolutely necessary to have resiliency to compensate for centrifugal force which tends to lessen the impression at high speed. While the use of steel cylinders mounted in roller bearings has greatly minimized the tendency of the cylinders to dance at high speed, it is generally agreed that this condition is more prevalent when blankets become packed down than when they are new and relatively resilient.

Conclusions

Heat can be applied to the ink with advantage to the appearance of the printed sheet and the working qualities of the ink. More research into this phase of ink must be done before ultimate conclusions can be arrived at. It has been the writer's experience that the printing is certainly brightened by the application of heat and the show-through is lessened. The set-off on the first impression cylinder is almost eliminated in its entirety and the smudge on the idler rollers is no worry at all.

As long as the difficulty of getting level plates continues, and there does not seem to be, at least in the near future, any chance of getting a pulp mat that will give us a plate that will be precision perfect in all its parts, resilient blankets must be used.

All cuts of a solid nature, and almost all halftones, must be raised in the form as high as possible. When a roller is used in molding, this height must be just below the fracturing point of the mat. When direct pressure is used, this height in the form can be increased as there is no stretching or fracturing.

No matter, however, what is done as long as we use the pulp mat in its present form, it will be impossible to get halftones or solids as high on the plate as the type without some kind of makeready on the back of the mat. With the rolling machine and rolling pressure, no allowance can be made for any stresses or strains that are set up in the mat and cork while it is moving under the roller. To amplify this statement let us take for example a form that is composed of halftones in the upper half and open advertisements in the lower half. When this kind of a page is molded by rolling pressure there is extreme stretching on the upper half of the mat and the minimum of stretch on the lower half. consequently, the mat is distorted between the two halves of the page. Somewhere about the middle of the page there is a strain on the mat and in all likelihood the stereotyper will find difficulty either in molding it or casting a plate from it.

Theoretically, the rolling machine molds one line at a time, but practically this is not true as the amount of compression that the mat and cork is subjected to spreads this "line" far out in front and at the rear of the roller. Putting steel plates and boards on the back of the mat over the cork when molding increases the danger of making the letters thicker and the dots in the halftones broader for the simple reason that as the mat advances under the roller it is being stretched. If the impression starts one inch ahead of the roller, then when the mat is directly under the roller the impression is not exactly in the same place as it was one inch ahead. Therefore, the less material used in molding the sharper the impression will be.

Molding a mat is, of course, distortion, and time and pressure are the essentials in making this distortion permanent. In rolling pressure, a mat is usually molded in about 20 sec. This means each inch of the mat travels through the machine in approximately one second. Each inch contains 72 points so each point is molded in 1/72 of a second, therefore the dwell on the mat is of a very short duration.

With direct pressure a mat can be molded in three seconds. The dwell or time the pressure is applied to every point in the mat is three seconds. The longer the pressure is applied the less spring back there will be in the mold. Halftones and solid cuts can be raised high in the form to permit the mat to be made thinner over the cut. Consequently, this brings the cut nearer the level of the type in the plate.

Challenger for International Treasurer

The Philadelphia Club of Printing House Craftsmen, in a resolution passed by the Board of Governors, has prevailed upon Craftsman V. Winfield Challenger to become a candidate for treasurer of the International Association which holds its annual convention and election in New York on September 24 to 27.

Mr. Challenger is Director of Printing of N.W. Ayer & Son and is affectionately known as "Win" to all his friends in the Graphic Art Industry.

His sponsors state: "His experience as President, Secretary, and Treasurer of the Philadelphia Club, extended over a period of many years. The work which he did as General Chairman of the Convention Committee of the Philadelphia Club when the International Association held its convention in the Quaker City in 1926, is favorably known and is still remembered as an outstanding achievement in convention management.

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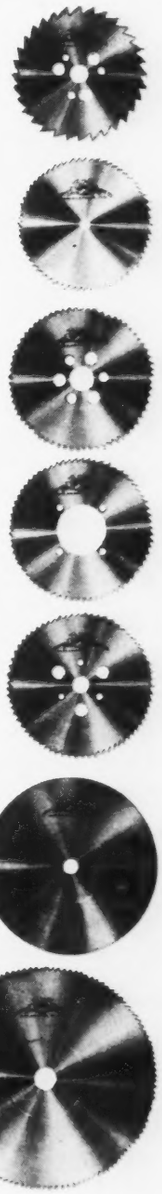

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"Contact"

Imperative to successful plate production in the offset printing process—It's almost the entire story of the offset press

By ADAM HENRI REISER

"CONTACT," was cried, the prop was spun by hand and the plane's motor came to life. Contact at the proper time was mighty important in the early days of aviation before the advent of the self-starter. Contact in lithography assumes immense proportions for it has been carried up with lithography's growth. Good contact, a proper source of light of the correct luminosity and at the correct distance from the vacuum printing frame, assures the desired result in making contact negatives from positives, or, the other way 'round. The further the light is away from the vacuum frame, (within reason) the greater are the liberties that may be taken with the original that is being shot. Ten to fifteen feet is accepted as a reasonable distance. Some cover the ceiling light bulb with a hood, leaving a small vent for the source of light. Others use a regular frosted bulb of 100 or 150 w., totally unshielded.

Contact of a proper sort is required in the camera room in placing the film on the stayflat. Lack of this contact shows in air bells, leaving hills, the high parts of which are of course closer to the screen than the flat-lying surfaces. During the exposure the high parts of the film form a different screen formation in that spot, marring the even tint that may be desired. There is also a possibility of that portion being out of register in the final positive or negative.

Contact is made more positive with the vacuum or suction film holder. One vacuum film holder supported a 16 in. by 20 in. lithographic stone in a perpendicular plane during a demonstration, the idea being to show the immense flattening effect possible on such a comparatively light material as photographic film.

Contact plays an important part in art work. In crayon work for illustration, the litho artist must work his crayon drawing well into the surface of the material upon which he is working. He must put it into proper contact with the grain of either the stone or the plate. Work that is just laid lightly upon the surface will soon disappear with the etch or wear in the press, if indeed it stands the rolling-up process.

Contact must be uniform when Ben Day tints are laid to get the smooth tints and lasting results. This is especially so upon stone or press plate, for in that sort of work, adhesion and cohesion secured by contact, are two of the qualities that go to make a better image.

Contact is highly essential in hand transferring, too. Pressure in pulling over the transfer to stone or plate assures this contact and insures this perfect intimacy of the greasy ink with all parts of the grain from the pits to the peaks. Contact must be assured between the printing surface and every particle of the ink on the impression being pulled over, to enable the grease-receptive surface to accept the grease before water put to the back of the transfer paper finds its way to the stone or plate's surface, for dampness repels ink. Contact in pulling the impression is another detail that caused one inventor to change the design of the pulling-over press, using a cylindrical roller instead of the conventional scraper. He combined this with hydraulic pressure to obtain a uniform pressure.

Contact in the vacuum printing frame as well as in the composing machine must be absolutely faultless no matter what may be the nature of the light-sensitive medium used. Countless headaches result from failure to get this proper contact in the photo-lith field. In past times when prints were made to stone, contact between the glass and stone was purely physical. The glass plate was clamped to the stone and the whole put out into the sunshine. With four or six hour exposures, who knew whether the full value of the dot was obtained? Any image was a laudable effort. But today, the trade is meticulous. With the advanced knowledge of photo-lith, shooting often takes place through two films at one time. Line work may be stripped under halftones using wet plate, strip film or regular film for one or both layers and all this with the expectancy of getting a good plate at every shot. (They don't always get it, but expect it anyhow.)

Contact must be exact in such cases, it goes without saying. And so, to expedite matters, the vacuum principle was applied to the printing frame to replace purely physical pressure. There are some who feel so certain of the power of this evacuation of air between the photographic material and the press plate that golden rod masking paper or opaque cellophane tape is used directly against tints for outline purposes. Need-

(Continued on Page 86)

Use This Printing Expert

By W. F. SCHAPHORST, M. E.

WHEN a representative of a responsible concern visits you, use him if you can. He will prove himself valuable to you. He may not be the same capable printing expert you are, but if he sells oils, for instance, the chances are a thousand to one that he knows more about oils than you do and if you will give him an opportunity he will save much money for you.

Most manufacturers' representatives are substantial and practical men who know their specialty from the ground up. Before they are allowed to go out and sell for a reputable concern they are thoroughly schooled. They must know their competitors' products as well as their own. They must understand the application of their products. A purely theoretical salesman cannot get anywhere—he must be "practical." Most representatives have been mechanics, engineers, or men with a solid technical backing.

Therefore, when these men happen along, it usually pays to give them a hearing. If you are already doing the best that can be done, a high grade representative of a high grade house will not pester you but will be on his way. However, it is always well to bear in mind that there are very few conditions that cannot be improved. Opportunities for saving and making money always exist.

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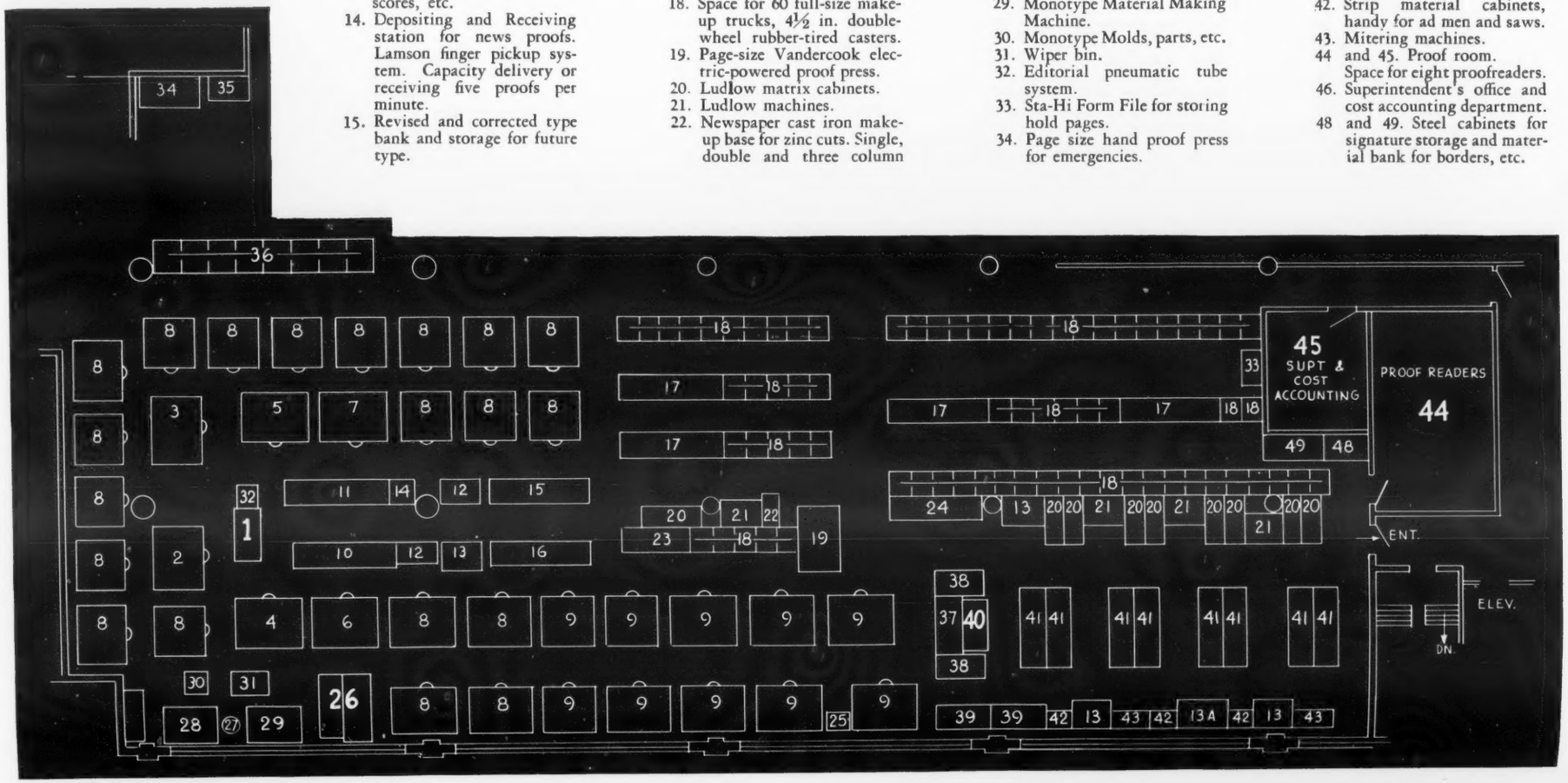
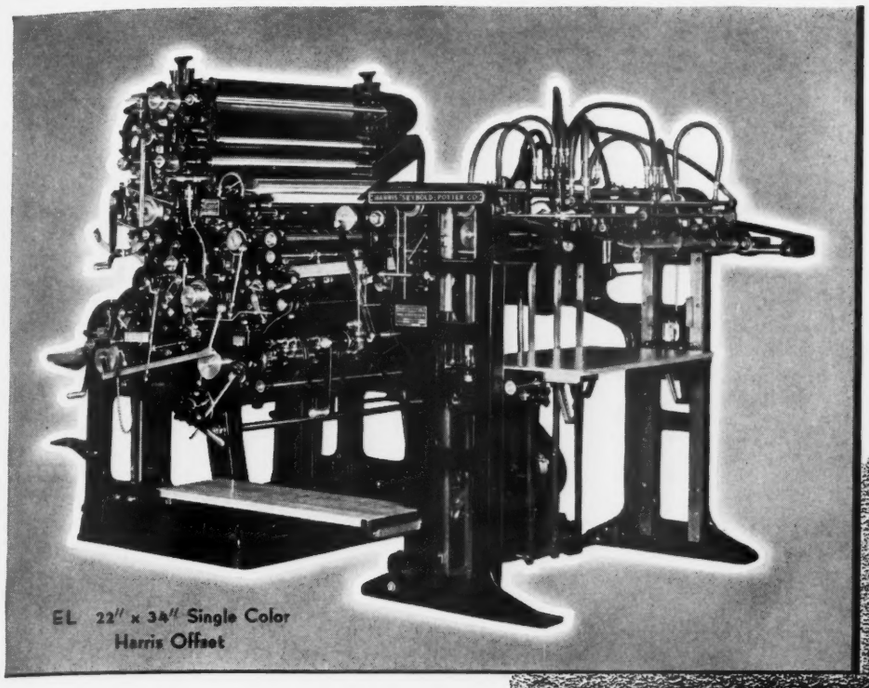
Index To Memphis *Commercial Appeal* Composing Room Layout

(*Story On Page 46*)

1. Copy cutter's desk, with pneumatic tubes (32) conveniently located.
2. Headletter machine for news heads.
3. Headletter machine for news heads.
4. Display headletter machine, art lines and captions.
5. Ring machine.
6. Display headletter machine and leads.
7. Ring machine.
8. Line and news machines.
9. Ad alley composing machines. (Ten in all.)
10. News dump and assembly bank.
11. Correction bank.
12. News proof press.
13. Saw for assembly bank. For sawing half-measure box scores, etc.
14. Depositing and Receiving station for news proofs. Lamson finger pickup system. Capacity delivery or receiving five proofs per minute.
15. Revised and corrected type bank and storage for future type.
16. Revised and corrected type bank and storage for future type. After type is revised and corrected on tables 15 and 16, it is dispatched to the makeup departments.
17. Four 10 ft. makeup tables, clear vision with material and storage beneath the surface. Each table accommodates five forms when large papers are being issued.
18. Space for 60 full-size makeup trucks, 4½ in. double-wheel rubber-tired casters.
19. Page-size Vandercook electric-powered proof press.
20. Ludlow matrix cabinets.
21. Ludlow machines.
22. Newspaper cast iron makeup base for zinc cuts. Single, double and three column widths, 24 pieces each from 6 ems to 30 ems in depth.
23. Bank and storage for sports makeup.
24. Ad correction and storage bank awaiting customers' proofs.
25. Split magazine rack for 72 and 90-channel magazines.
26. Machinist's bench.
27. Oil and supply cabinet.
28. Electric Elrod.
29. Monotype Material Making Machine.
30. Monotype Molds, parts, etc.
31. Wiper bin.
32. Editorial pneumatic tube system.
33. Sta-Hi Form File for storing hold pages.
34. Page size hand proof press for emergencies.
35. Small ad proof press.
36. Small ad storage and hold ad cabinets.
37. Ad machines type dump.
38. Rouse Band Saws.
39. Ad markup desks.
40. Ad foreman's desk.
41. Eight 10-foot ad assembly stands with overhead lighting fixtures and material racks.
42. Strip material cabinets, handy for ad men and saws.
43. Mitering machines.
44 and 45. Proof room. Space for eight proofreaders.
46. Superintendent's office and cost accounting department.
48 and 49. Steel cabinets for signature storage and material bank for borders, etc.





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PIONEER BUILDERS OF SUCCESSFUL OFFSET PRESSES

The Identification of Printed Matter*

IT is often important to know by what process a particular specimen of printed matter has been produced in order to appreciate what may be causing certain troubles or how best to produce a similar job. Although with experience one may in some instances be able to form an opinion from a superficial inspection of the print, usual examination under the microscope, and other tests, will provide more definite information. In the following short article the various features which serve to differentiate between prints produced by the three major processes—*i.e.*, letterpress, lithography and gravure, are described.

**Printed by courtesy of the Director of Research, The Printing and Allied Trades Research Association, London, England, from* Patra Journal, *official publication of the Association.*

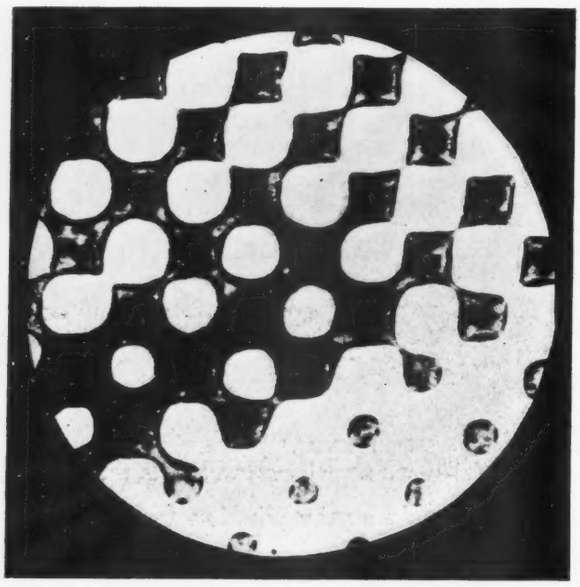

Fig. 1—Letterpress Halftone (120 Line Screen) (x57)

Fig. 2—Letterpress Type Matter (x15)

Letterpress

Since in letterpress printing the printing areas of the forms are in relief, there is a tendency for the ink to be squeezed to the edges of the dots or type faces by the pressure applied during printing. This results in the production of the so-called "squash mark," which appears as a dark line round the edges of the characters. The effect can be seen in Figs. 1 and 2, which are photomicrographs of letterpress halftone and type-matter respectively. The amount of squash mark produced depends upon several factors, amongst which are the smoothness of the paper and the ease with which it absorbs the ink; in general, the smoother and less absorbent the paper, the more pronounced is the squash mark.

The printing areas of a letterpress forme are forced into the paper to an extent which varies according to the paper's compressibility and the printing pressure employed. This produces, in addition to the inked impression, a certain amount of embossing of the paper which can often be felt or seen on the reverse side of the sheet. In extreme cases, the embossing produced is sometimes sufficient to perforate the paper. Fig. 3 is a photomicrograph taken with very oblique illumination of the reverse side of a sheet of letterpress prints and shows the embossing of the letters.

Lithography

Lithographic prints are produced from a metal plate (or stone) on which the printing image is in the same plane as the rest of the plate and it is not in relief as in the letterpress process. Lithographic prints are therefore free from the squash mark and embossing effects mentioned above. Photomicrographs of typical lithographic prints are shown in Figs. 4 and 5. Since the boundary between image and non-image areas depends upon their ink-accepting and ink-repellant properties respectively, it is never as sharp as in the letterpress process, and there is therefore always a certain amount of "fuzziness" in the outlines of a lithographic print when viewed under the microscope. This can be clearly seen from a comparison of Figures 1 and 4 which are

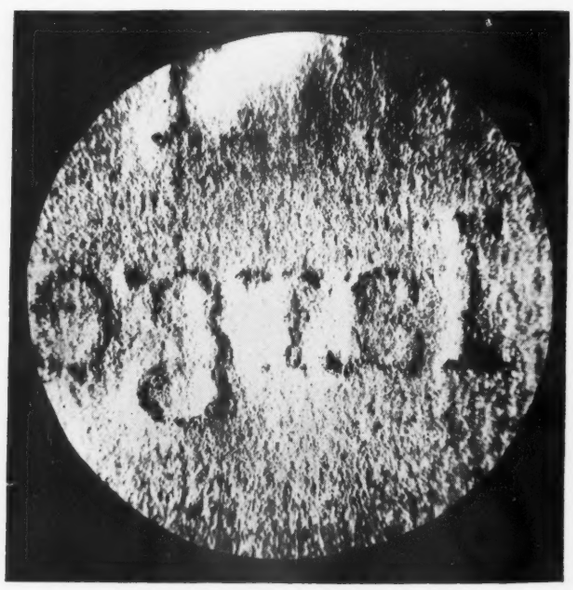

Fig. 3—Reverse Side of Letterpress Print Showing Embossing (x12)

IN THE *Spot Light!*

the *NEW* KLUGE "AP" PRESS

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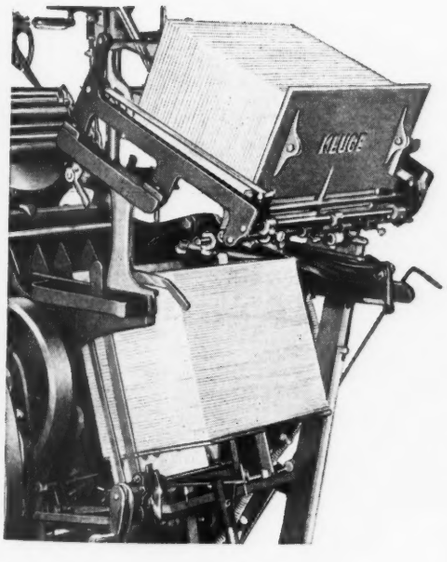

14 inch capacity magazine and delivery each hold 3250 sheets of 20 lb. bond. Magazine accommodates various weights of stock from onionskin to ¼ inch board by simple adjustments.

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DALLAS - SAN FRANCISCO - LOS ANGELES - MINNEAPOLIS - CANADA, SEARS LIMITED

halftone dots reproduced by letterpress and offset lithography respectively.

In addition to this lack of sharpness, a further indication that a job has been lithographed is the presence of scum marks—*i.e.*, an unwanted accumulation of ink, usually in the form of bands composed of minute dots of ink which can often be seen on the non-image areas of the prints, especially if the prints have been taken from the end of a long run. In multicolor work, if the untrimmed sheets are available, the presence of register marks will provide additional evidence that the sheet has probably been printed by lithography.

Photogravure

The feature of the photogravure process which distinguishes it from lithographic and letterpress printing, is that whereas in these latter processes, variations in tone in halftone illustrations are obtained by varying the size of the halftone dots, which are all uniformly black, in photogravure the size of the small cells into which the plate is divided remains constant, and variations in tone are secured by varying the amount of ink carried in each cell which in turn is controlled by its depth of etching. Fig. 6 is a photomicrograph of a portion of a rotary photogravure print on a high quality gravure paper. The uniform size and the variation in intensity of the dots into which the image is broken, can be clearly seen.

In the solid areas of the print, as seen at the left-hand side of Fig. 6, the screen mark, or divisions between the cells, has been partially obscured by a sideways spread of the excess ink before it had dried. A further feature which serves to differentiate photogravure is that their screen lines are only about one-fourth of the width of the dots, irrespective of the tone value, whereas in prints reproduced using a halftone screen, the space between the dots varies from very great in the high lights, to very small in the solids.

Fig. 7 is a photomicrograph of type matter reproduced

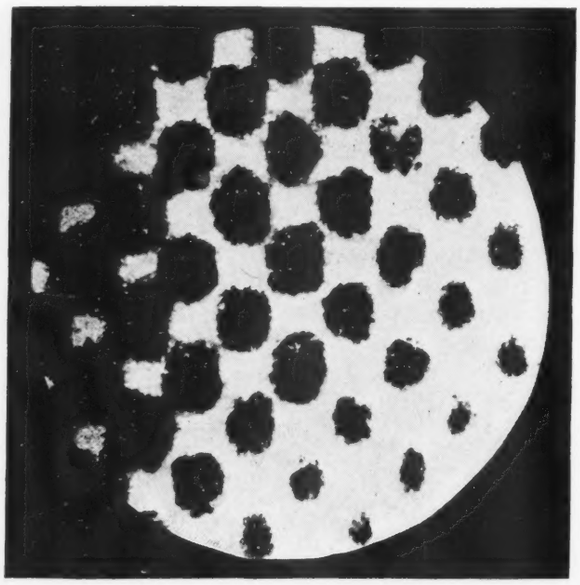


Fig. 4—Photolitho Offset Halftone (133 Line Screen) (x57)

Fig. 5—Lithographic Type Matter (x15)

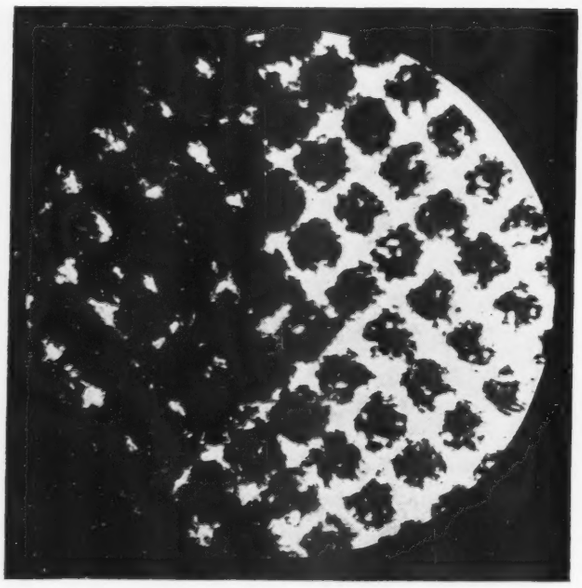


Fig. 6—Rotary Photogravure Print (x57)

Fig. 7—Rotary Photogravure Type Matter (x15)

PLASTIC BINDING

improved to the

POINT OF PERFECTION

OUR recent announcement of this new and improved non-breakable, non-shrinkable, non-inflammable material for PLASTIC BINDING was news of the first magnitude!

The tremendous value of this preferred binding process to publishers, advertisers and printers was apparent right from the start. It became immediately imperative that an ideal Plastic material for such an ideal binding process should be perfected.

For four years the PLASTIC BINDING CORPORATION has worked closely with leading industrial chemists in the country's largest laboratories. It has kept in touch with the results of every experiment which might conceivably lead it closer to the eventual discovery of the perfect formula.

The introduction of a material for PLASTIC BINDING that is non-breakable, non-shrinkable, and non-inflammable, the last obstacle to the universal application of the Plastic Binding process has been overcome. The last difficulty connected with the use of Plastic-bound books and booklets has been surmounted.

Plastic Binding, with its trim lines, is the binding that is today holding the spotlight of Public approval. Its smart modern appearance—its substantial colorful backbone permitting title stamping—is ideal for catalogs, price lists, sales portfolios, brochures, swatch books, check books, school annuals, cook books, window displays, etc.

Send at once for a sample kit of the *new* Plastic rolled combs in addition to a color swatch showing 13 different brilliant shades from which to select.

PLASTIC BINDING CORPORATION
732 S. SHERMAN ST.
CHICAGO, ILL.

by rotary photogravure, and shows the appearance of the screen mark as small dots and produces serrated edges to the letters. On rough papers the regularity of the screen mark which is seen in the two photomicrographs, is often seriously disturbed. Fig. 8 is a typical photogravure print on a rough paper.

Aniline Printing

Of recent years much of the cheaper class of printing, such as paper bags and wrapping materials, is being produced by the aniline process. The ink used is, broadly speaking, a solution of one of the so-called aniline dyes in methylated spirit. It is usually printed on a rotary machine from rubber stereos, although the normal type of curved metal plates can be used. The process is thus a modification of letterpress printing, and as such, aniline prints often exhibit squash mark when examined under the microscope. Owing to the resiliency of the rubber plates, there is no embossing produced when printing from rubber stereos. Since the ink films consist essentially of a dye, and are thus comparatively transparent, the colors of an aniline print are generally much more brilliant than those of an ordinary letterpress print using pigmented inks. Pigmented inks made on a spirit basis are, however, now available for use in aniline printing.

Most aniline inks are fugitive to light, although of recent years considerable improvements have been made in this direction. The dried ink films are in general much more soluble in methylated spirit than is the case with a normal letterpress or lithographic ink and this test in addition to the general appearance of the print provides the most conclusive evidence that the aniline process has been used.

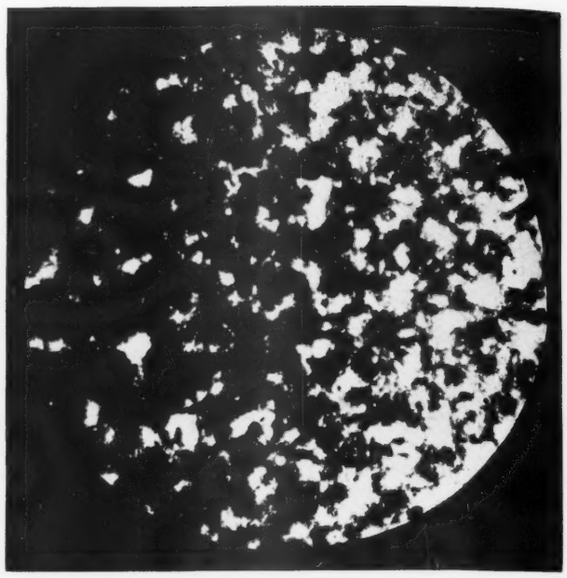


Fig. 8—Rotary Photogravure Print on Rough Paper (×57)

In conclusion, it is desired to thank Dr. F. W. Clulow of the London School of Printing for permission to use the photomicrographs (with the exception of Fig. 3) which illustrate this article.

Boy, Pneumatic Tubes, Basket Carrier, Conveyor Belt or Toy Train—Which?

A reader of *Printing* Equipment *Engineer* wants suggestions for a means of conveying proofs in a daily newspaper plant from one of any three proof rooms to another, and from department to department. He states that a pneumatic tube system is out of the question because of the expense and that a boy for running proofs from one department to another is not available.

From the accompanying diagram it will be seen that there is a runway between the proof rooms connecting the editorial department and the composing room. The placing of the various rooms is the result of accretion rather than planning—and for the present must be "put up with."

From the composing room proof press to window of No. 1 proofroom the distance is 40 ft. Likewise, the distance from No. 1 proofroom to copy editor is 40 ft.

Since it is not possible to rearrange the partitions, our reader wants suggestions for some kind of proof transmitting system which will not be too expensive in price. He has investigated several conveyance means but would like suggestions which might occur to readers of *Printing* Equipment *Engineer*.

Intertype Installations

One or more Intertypes have recently been ordered by the following: Peoria (Ill.) *Journal-Transcript;* Portland (Ore.) *Journal;* Cleveland (Ohio) *Shopping News;* Galveston (Tex.) *News* and *Tribune;* Johnstown (Pa.) *Tribune;* Lawbrief Co., Des Moines, Iowa; North Hollywood (Cal.) *Press;* Acme Typesetting Co., Brooklyn, N. Y.; General Composition Co., Boston, Mass.; American Typesetintg Corp., Chicago, Ill.; San Francisco (Cal.) *Monitor;* Angel Guardian Orphanage *Press*, Chicago, Ill.; Rumbold (Neb.) *Standard;* Whitlock Press, Inc., Middletown, N. Y.; *Claremont Press & Rockridge Record*, Oakland, Cal.; Lafayette (Ind.) *Journal & Courier;* Rochester (Minn.) *Post-Bulletin;* Beaver Falls (Pa.) *Tribune;* W. E. Neilson & Son, Palo Alto, Cal.; Parker Printing Co., San Francisco, Cal.; Tamalpais Union High School, Mill Valley, Cal.; Meriden (Conn.) *Morning Record;* Sacramento (Cal.) *Union;* St. Louis (Mo.) *Post-Dispatch;* Bel Air (Md.) *Aegis;* Eureka (Cal.) *Times;* Humboldt Standard, Eureka, Cal.; Oakland (Cal.) *Leader;* Tulelake (Cal.) *Reporter;* Champlin-Shealy Co., Inc., Chicago, Ill.; Ingham County *News*, Mason, Mich.; Philipsburg (Pa.) *Daily Journal;* Lawrence Typesetting Co., Milwaukee, Wis.; R. W. Ernest Printing Co., Los Angeles, Cal.; Franklin Typesetting Co., Los Angeles, Cal.; Western States Teachers' College, Kalamazoo, Mich.; Omaha (Neb.) *World-Herald;* West Bend (Wis.) *Washington County News;* Altoona (Pa.) *Mirror;* Oregon State College *Press*, Corvallis, Ore.; *Bramwood Press*, Indianapolis, Ind.; Hudson (Wis.) *Star-Observer;* Commerce Clearing House, Inc., Chicago, Ill.; Portland (Me.) *Express, Telegram* and *Press-Herald;* W. K. Kistler Stationery Co., Denver, Colo.; Yaeger Typesetting Co., Columbus, Ohio; Frye Printing Co., Springfield, Ill.; Nicolas Press, Inc., Brooklyn, N. Y.; Rochester (Minn.) *Post-Bulletin;* Goldsboro (N. C.) *News-Argus;* Yreka (Cal.) *Journal;* Brewster Advertising Co., Salt Lake City, Utah; Flower City Typesetting Co., Rochester, N. Y.; Arland Printing Co., New Hyde Park, L. I.; Doherty Printing Co., Los Angeles, Cal.; Bee Printing Co., Borger, Tex.; Chief Printing Co., Perry, Iowa; Mascoutah (Ill.) *Herald;* Milwaukee (Wis.) *Times*.

Joins Morrill

William B. Edmondson, Philadelphia, who has been engaged in the supply business to newspapers and the printing industry, has joined the sales staff of the Geo. H. Morrill Company Division, General Printing Ink Corporation. His headquarters will continue in Philadelphia.

Zephyr BLACKS

ACCLAIMED by craftsmen everywhere. Perfected in three grades.

Zephyr Halftone: For use on high-grade work. Prints clean and sharp in the most delicate halftones and highlights. Suitable for all grades of standard coated stock.

Zephyr Super: May be used on any S. & S. C. stock.

Zephyr Utility: For coated stocks A lower priced ink for general utility where the job does not require the ultimate in tone values.

Write for descriptive folder.

Sinclair and Valentine Co.

Main Office and Factory: 611 West 129th Street, New York

ALBANY BALTIMORE BIRMINGHAM BOSTON CHICAGO CLEVELAND DALLAS DAYTON
HAVANA JACKSONVILLE KANSAS CITY LOS ANGELES MANILA NASHVILLE NEW HAVEN
NEW ORLEANS PHILADELPHIA SAN FRANCISCO SEATTLE

Engraving Production

Made to flow straight line-wise in long, narrow room peculiarly adapted for the purpose

By E. D. JAGARESKI*

RECENTLY, the Albany (N. Y.) *Knickerbocker News* put into use a modernized engraving room which has been remodeled purposely to house its modern engraving equipment. The new engraving room is 60 ft. by 17 ft. with separate enclosed room for the etching machine, powder box, burning-in stove and etching sink, ventilated by a fan and vents connected to all the equipment in the room.

At the entrance to the room is located the foreman's desk, copy table and water cooler. All the equipment has been placed in such manner as to facilitate the work in the room on a straight production line.

The floor of the main room is hard maple with sub flooring 1¾ in. thick. The entire wall and ceiling area is painted in ivory with emerald green trim 48 in. high. Lighting is taken care of by both ceiling and wall outlets over the equipment where needed. Besides modern automatic ventilation, the room has seven large windows which give plenty of light and ventilation.

The construction of the building, placing of equipment and laying out of the room were all under the personal direction and supervision of Production Manager John A. Burke of the Gannett Newspapers.

The Camera

A large size Chemco strip film camera is used. It is adapted for fine and coarse screen work and line work and is furnished with lens, lights, automatic focusing scales, stop rationer, screen separation chart and a patented disappearing screen mechanism.

Any amount of film from one to twenty-four inches may be turned down into photographic position from any of three rolls by means of the crank under each film dial.

While the screen shifting mechanism is convenient when alternately making line and halftone negatives, its primary purpose is for the production of combination highlight halftones photographically. The camera is fitted with a special copy board and with other means to make a double exposure on the same piece of film, one exposure being halftone and the other line.

The camera is 17 ft. in length, width is 57 in. at the light frame. Four 50 in. and two 33 in. General Electric Vapor lamps are mounted in a special light frame. One additional light of each size is stored for emergency use.

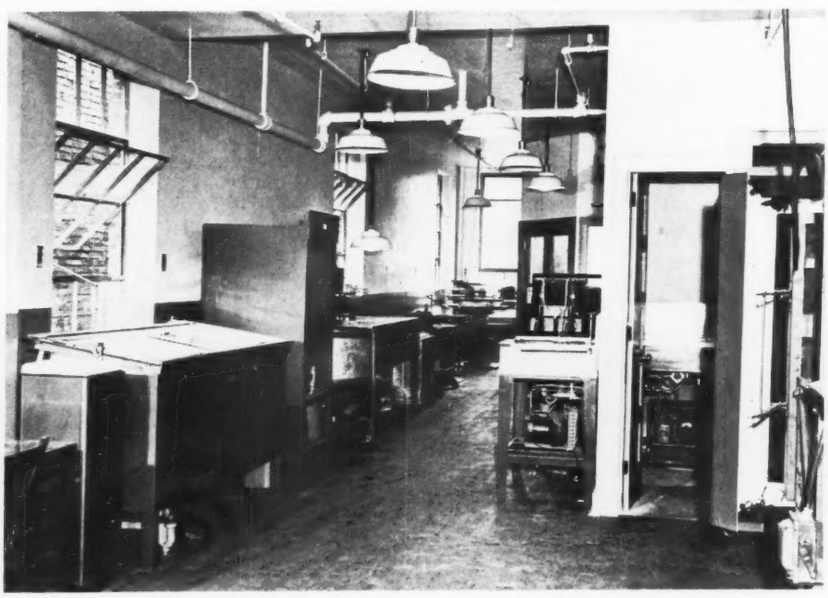
The Etching Machine

In the engraving department we have the following new equipment:

On the Chemco lever control etcher, constructed of nitric acid-proof chromium steel, the machine and its plate holder are operated at a level convenient for the etcher. The machine runs continually during the etching of a plate. The acid spray is controlled by means of a lever. When this lever is thrown forward, the etcher may draw the plate holder from the machine and examine his plate even though the machine is running at full speed. Should the etcher desire to take an additional bite, he returns the holder with the plate into the machine and after manipulating the lever, the acid is permitted to drive up against the plate.

The moving plate holder permits handling the plate into and out of the machine. The holder sides on chromium steel rods. A spray line with a quick opening valve is mounted in such position that the plate may be sprayed with water before handling. The multiple blade paddle wheel runs at 500 r.p.m. breaking the acid into a spray and driving it forcefully up against the plate. The spray has such force that it cleans the plate without brushing. It is not necessary to turn the plate during a bite. A compartment at the front of the machine acts as a height indicator so that the etcher at all times may know the level of his bath and whether to add water or acid. A high speed ventilating fan and vent are built into the machine so that the fumes generated by etching may be carried out of the building.

**Mechanical Superintendent, The Albany (N. Y.)* Knickerbocker News.



Burning-In Oven and Cooler

A Chemco combination burning-in oven and cooler takes care of burning-in and cooling the plates. This cooler will burn in plates of any size up to a full page in about ten seconds. The stove is equipped with a plate holder which runs freely in and out of the heating chamber. When fully in, the gas is turned on full, and is lit by the pilot light. When the plate holder is drawn out, the gas is automatically cut off. The gas flames are set well below the plate holder so that the flame does not come in contact with the zinc.

The cooler is fitted with cushioned top on which the plate is laid after it is removed from the plate slide. Depressing the foot pedal causes water to gush up under the plate, cooling it instantly without water overflowing on top of the plate. The plate is drawn over the rubber wiper and is ready for re-powdering or etching.

Powder Cabinet

The powdering of plates is taken care of in a Chemco glass powder cabinet. In the powdering operation the Chemco glass filter powder cabinet is fitted with special filters which will pass air but not powder. The floating powder is drawn by means of a suction fan up into the filters which must be replaced occasionally when clogged with powder. The fan bearings and motor are so mounted outside of the cabinet as to be protected from the powder.

A gas stove takes care of cooking the cold top enamel which is prepared from a formula of our own.

The Etching Room

The etching room is 12 ft. by 14 ft. and enclosed by a glass partition with double swinging doors leading out into the main room. The floor is of an acid resisting concrete and has a drain in the center of the room and another drain in an acid trough which is conveniently located between the etching machine and the etching sink.

The etching sink is 30 in. by 60 in. lined inside and out with stainless steel and fitted with two mixing faucets for hot and cold water.

The Dark Room

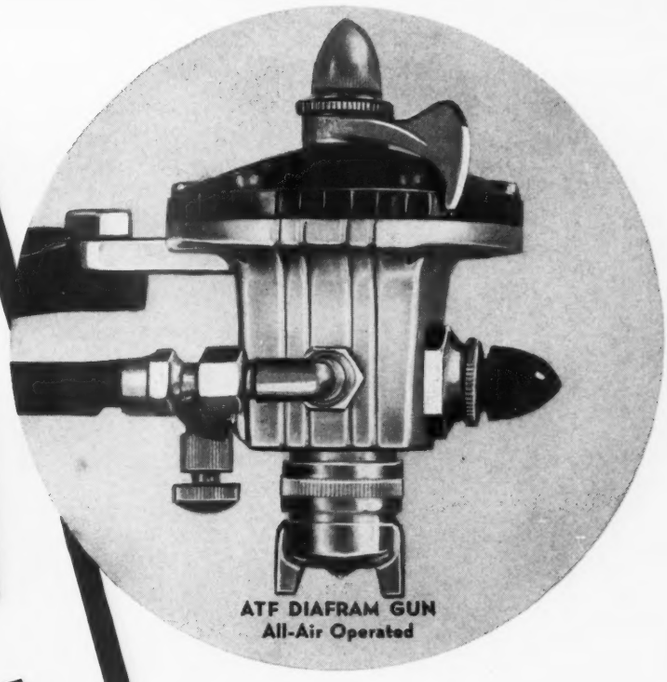
The dark room is 6 ft. 6 in. by 6 ft. 9 in., vented, and also has an acid resisting flooring with a sliding window connected with the outside stripping sink. In this room we have an all-metal darkroom sink with a built-in cooling device. This sink is 74½ in. long, divided into three parts for trays. It has an adjustable temperature control and concealed cooling coils which cannot come in contact with rinsing water or chemicals. An electric double switch controls the ceiling and wall safe lights, also white lights.

Stripping Sink

Outside the dark room is a stripping sink to receive film negatives after the photographer removes them from the fixing bath in the dark room. A water line is mounted over this sink. The negatives on their paper backing are placed on the wooden grid in the sink and kept moist until the stripper is ready for them. This sink is of stainless steel with a built-in refrigerating unit. Two men may work at the large stripping cabinet at the same time.

The glass frame is of stainless steel, welded at the corners with a recess at the bottom to receive water squeegeed from the film, which is drained off by means of a pipe running through the bottom of the cabinet. The ground glass is in one piece, brilliantly and evenly illuminated. The glass flats rest against rubber bumpers. The glass frame may be used flat, or set at a convenient angle by means of a carnk at the back of the cabinet.

A NEW ATF GUN



ATF DIAFRAM GUN
All-Air Operated

at a lower price!

Four years ago ATF Non-Offset Guns gave printers a new chance at more business and more profits by creating savings in production. Today, ATF has perfected an all-air operated Gun that offers you even greater savings in production and a better chance for more business and more profits . . . at a lower price than ever before!

● The sole reason for ATF's switch from the highly satisfactory solenoid operation to all-air operation is that the new ATF Diafram Gun has no expensive electrical parts and connections . . . therefore costs less and is easier to operate. It's construction is simpler and less expensive to make . . . resulting in savings that are passed along to you in reduced prices.

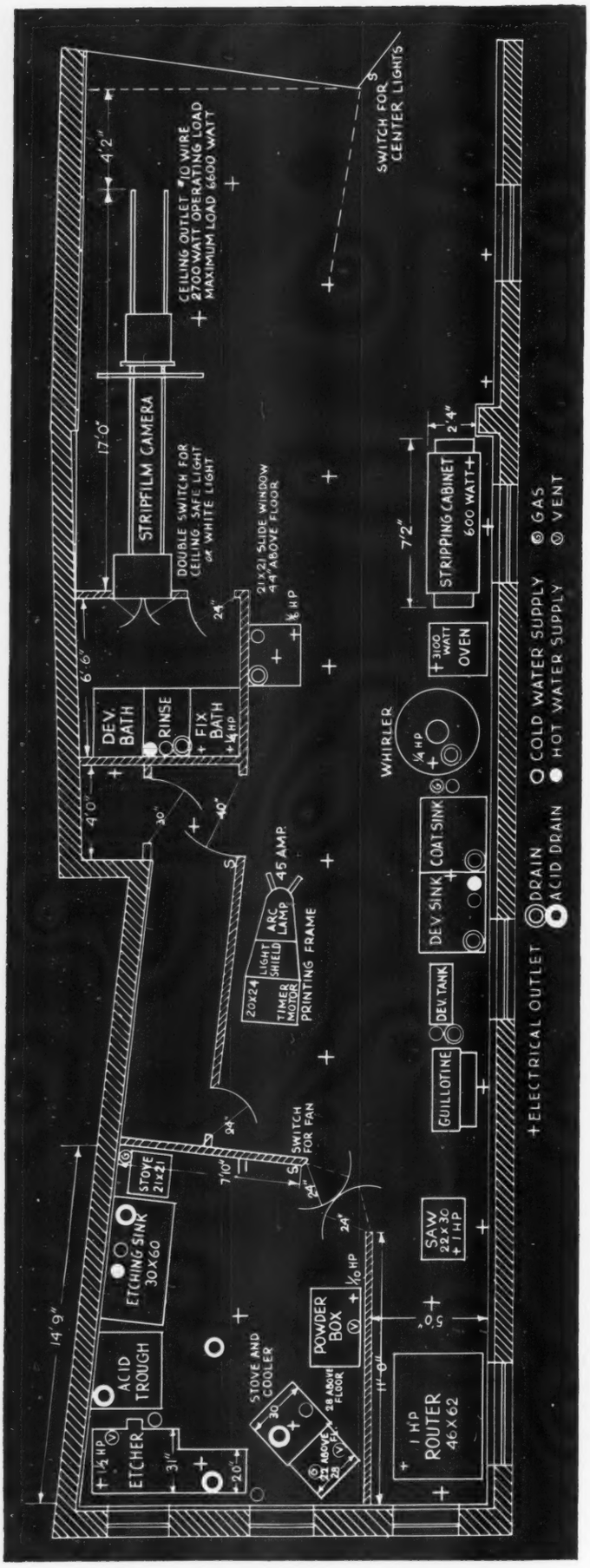
● All the features that have made ATF Guns the leading non-offset spray equipment have been retained . . . with more added to give printers a better Gun for less money. Ask your ATF Salesman for details about ATF's all-air operated Diafram Gun . . . or write your nearest ATF Branch office. See it at the National Graphic Arts Exposition in New York!

AMERICAN TYPE FOUNDERS

200 ELMORA AVENUE · ELIZABETH, NEW JERSEY

BRANCHES AND SELLING AGENTS IN PRINCIPAL CITIES

Types used: Kaufmann Bold, Headline Gothic and Bernhard Gothic Heavy



Floor Plan Diagram, Engraving Department, Albany (N. Y.) *Knickerbocker News*

A squaring-up device of stainless steel is built on the frame and is supplied with two stainless steel swivel Tee squares, which may be lifted off the rods at will and placed in any desired position. Extra long bearings on the Tees insure the straight edge being held rigidly in position. Two sliding doors on the front of the cabinet permit easy access to the lights. Tool trays are supplied on both ends of the cabinet.

Negative Drying Oven

In the negative drying oven space is provided for 12 full-page flats. Four special heating elements are supplied. Three are controlled by the manually operated switch and one by the mercoid switch.

The mercoid switch prevents heating beyond the point for which the switch is set even though the manually-operated switch is set so that all four heating elements are in operation. The blower motor is operated by a separate wall switch and it is not possible to operate the heating elements unless this switch which starts the motor is closed.

The oven is constructed of steel, is insulated, has sliding front doors and the motor and switches are placed on the front where they are readily accessible.

Automatic Whirler

The automatic Whirler will produce uniformly cooled plates, set at the proper speed and heat for the enamel used. The motor-driven whirling mechanism rotates at speeds from 60 to 200 r.p.m. A perforated water ring around the top of the whirler permits the water to flow down the inside walls carrying thrown-off enamel down into the drain.

The combination developing and coating sink is 78 in. by 30 in., is constructed of stainless steel and is provided with a hot and cold water supply.

Developing Tank

A Chemco water jacketed cold enamel developing tank is used. This tank is constructed of heavy stainless steel. The tank is so constructed that the cold enamel developer in an inside tank is entirely surrounded by water. A dial thermometer indicates the temperature of the water. It is obvious that by means of the hot and cold water valves, the temperature of the water can be controlled.

Vacuum Printing Frame

The Douthitt Vacuum printing frame is manufactured of metal throughout and is fitted with vacuum gauge, air valve, electric switch and interval timer attached to front instrument board. With the spring and fulcrum bracket arrangement attached to the frame, the glass section may be raised with very slight effort to any position for loading and will remain in that position until moved. The spring fulcrum arrangement also equalizes the weight of the loaded frame for swinging into position for printing.

A Solar-Lite double arc printing lamp is used with the Douthitt printing frame. It has a large reflector frame with double arc.

A Royle heavy duty router, a Niagara Guillotine and metal saw have been installed for cut-finishing work.

Expansion Program

John A. Muller, president of Craftype Press, Inc., typographers for several New York advertising agencies has announced a program of expansion that will include a special department to be devoted to sales promotion plans, commercial art, sales presentations, chart work and special maps for sales and advertising executives. This new service will be under the management of J. B. Keeney, for the past four years associated with Hagstrom Co., Inc.

MONEY SAVING PRODUCTS

for Newspapers, Commercial Printers *and* Lithographers

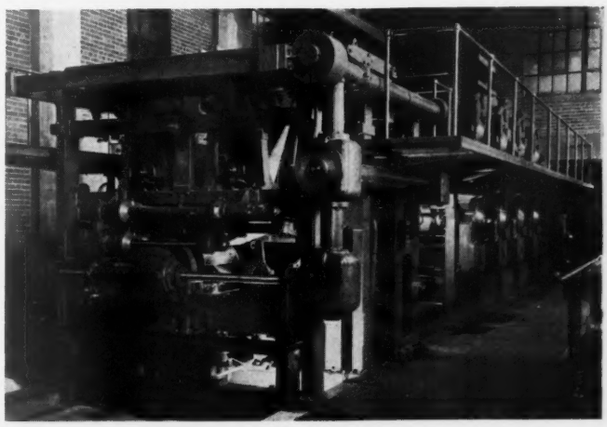
● **Newspaper Press Blankets.** A very successful line of Felt and Non-Felt Blankets, E. D. Blankets, Draw Sheets, and Underpackings. All of these are widely used, but the recent trend throughout the country is toward Vulcan's "67-76" combination—*i.e.*, No. 67 Non-Felt Blanket and No. 76 Cork Underpacking. This *balanced* combination is doing a marvelous job, both as to print improvement and money saving.

● **Newspaper Rollers.** "More than two years without resetting." "Now in their fifth year of splendid service." These comments, which are typical of many, refer to Vulcan Vulcolastic Inking Rollers. Vulcolastic Rollers are preferred by many newspapers because of their long life, low cost, and splendid inking qualities.

● **Rollers for Commercial Printers.** "Vulcan Rollers installed two years ago are still going good—twenty-four hours a day, seven days a week—on Miller two-color press." That recent comment suggests why Vulcan Gelastic Rollers have become so popular in many printing plants. Long and dependable roller service has a very important effect on printing profits!

● **Offset Blankets.** Most Lithographers and Offset Printers use Vulcan Offset Blankets. However, Vulcan has never been satisfied to coast along on past achievements, and improvements in these blankets are constantly being developed in the Vulcan Laboratory.

● **Litholastic Rollers.** Three recent orders from New York firms are typical of the way these rollers are being purchased by Offset Printers and Lithographers everywhere: Snyder & Black, 200 William Street, for a Miehle No. 69 two-color press. Stearns & Beale, 150 Varick Street, for a Harris LSB press. General Reproductions, Inc., 55 Van Dam Street, for a Harris EL press.



Rotary offset press of the Trenton, N. J., Times, equipped with 8 Vulcan No. 43 Offset Blankets and 88 Vulcan Litholastic Inking Rollers.

Write for Particulars and Recommendations.

VULCAN PROOFING COMPANY

First Ave. and Fifth-Eighth St., Brooklyn, N. Y.

Sales Representatives in Principal Cities.

V U L C A N

MONEY SAVING SPECIALTIES FOR THE GRAPHIC ARTS

Equipment-Supplies

Albanite Crystal, a new crystal clear synthetic solid developed in K&E laboratories. It's used as a transparentizing agent in making Albanene Tracing Paper.

Synthetic Solid Used in Tracing Paper

A new type of tracing paper which is said to combine the transparency of oil treated sheets with the permanence of natural 100% rag papers is a recent development of the Keuffel & Esser Company, Hoboken, N. J. The paper is named albanene. It is made of 100% long fiber clean white rags, and it is treated with a new crystal clear synthetic solid called Albanite, developed in the K & E laboratories. Because this new transparentizing agent is free from oil and wax and both chemically and physically inert, it is claimed that Albanene will not oxidize, turn yellow, become brittle, or lose transparency with age.

According to the manufacturer, the new chemical has remarkable penetrating power so that an extremely long fiber base paper can be used, giving Albanene an unusually high strength factor by all standard paper tests. The ability of Albanite to penetrate "wild" fibers gives Albanene unprecedented transparency and superior blue printing quality, manufacturer states.

Albanene is made in three weights—light, medium, and heavy. An illustrated brochure and a working sample of this new paper can be secured by writing to the manufacturer.

Discus

A type face christened Discus is being introduced by European Typefounders, Inc. It is a creation of Designer Martin Wilke. The new face goes along with development of the style of the latin script. "Discus," states its

Discus

sponsor, "has excellent alignment and is closely fitted—an excellent trait in non-kerning types."

A specimen book is available upon request to Eureopean Typefounders, Inc.

Craftsman Offset Table

Craftsman Line-Up Table Corporation announces a precision offset table for use in offset-lith plate-making operations. It is designed to aid in registering, ruling, masking, stripping, opaquing and retouching preparatory to plate-making. A feature of the table

View of Craftsman Precision Offset Table. Has several new features. Made especially for Offset-lith platemakers.

is the ruling mechanism which is designed for pen and ink negative and direct plate ruling and is interchangeable on each straight edge. Vertical and horizontal straight edges are provided for precision spacing. Two carboloy-tipped steel points and one ruling fountain pen are furnished. The table is furnished with illuminated compartment to provide strong indirect light.

The frame work of the table is sheet steel, reinforced and welded for rigidity.

A magnifying glass is affixed to each straight edge.

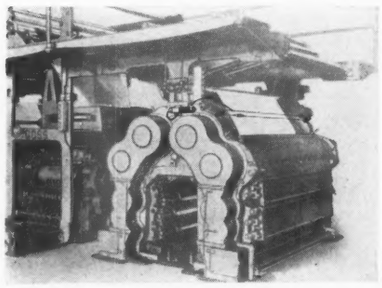
P-Double-E File No. 2D14.

New Dry Mat

A new "Flex" dry mat has been put on the market by the Flexideal Dry Mat Corporation, according to an announcement sent out by President W. J. Sullivan. The new mat, it is announced, is made entirely in this country and several different types are offered for commercial and syndicate as well as newspaper purposes. The company also manufactures a direct pressure mat.

Fra-Bur Static Burner

The Fra-Bur Static Burner is for application to printing presses—letterpress, gravure and offset, paper-making and textile machines, and other machines like sheet-fed presses, automatic feeders, etc. The Fra-Bur Static Burner collects static from the paper and the machine, burns the static electricity up the same as an electric light consumes electricity and prevents it from dissipating into the air for recollecting or gathering.



Fra-Bur Static Burner installed on a Goss Rotary Press. May be installed on presses, paper-making and textile machines.

The device consists principally of a static globe enclosed in a casing, static collecting wire, a short ground wire and insulated static collecting wire knob supports.

The case containing the static globe, in the case of a rotary web press, is fastened in a position by means of a strap to the outside of the press frame. The static electric gathering wire loop is fastened to the insulated knobs so that the wire will extend across and ½ in. from the web. A turnbuckle is supplied to maintain the looped static gathering wire in taut relationship to the paper web. A heavy insulated wire is then attached to the static collecting wire and to the static burner globe connection. A short ground wire is connected to the burner and the press frame.

In most cases, states sponsor, one burner installed above the second impression on a rotary press will be sufficient for one unit. However, it the static is greater, one to two burners installed between the sheet leads from press to drag roller above the folder may be required. If stationary tension belts are copper-faced straps, the tensions may fill the sheets with static electricity. In this case a static burner may be required on the webs before entering the first impression.

Further information respecting the Fra-Bur Static Burner may be secured from Sta-Hi Corporation, 1020 Crocker St., Los Angeles, Calif., or from Engineering Department, International Printing Pressmen and Assistants' Union of North America, Pressmen's Home, Tenn.

P-Double-E File No. 5V.

Continued on Page 80

MEISEL•

PRESSES FOR ADVANCED DESIGN

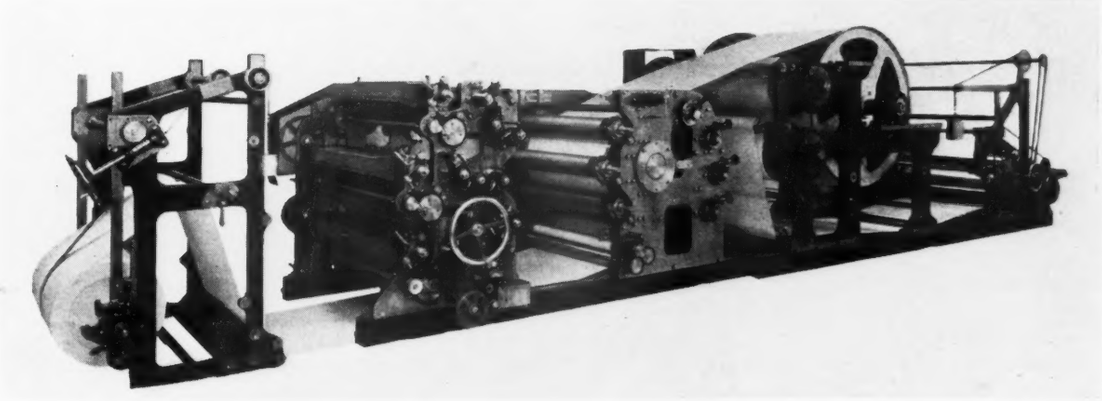


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Fig. 1.—View in composing room of the Raleigh (N. C.) News and Observer. *Composing Room Foreman Speer relates in this article how he altered the makeup and lighting facilities to provide what he feels are best conditions for night operation in the makeup department. With the makeup frames shown in this picture Mr. Speer states ten forms on makeup trucks and four dead-slug bins can be accommodated in a space 5 ft. by 11½ ft.*
The overhead material trays were lowered to a point just above the chases by providing a special bracket to support the trays and the dead-slug bins. Note the overhead daylight lighting fixtures. The makeup table overhead material trays, as will be seen, were also lowered to provide maximum illumination for the makeup man.
Table shown in foreground is 8 ft. long and is used for daily ad storage. Picture also shows three 10 ft. makeup tables with lowered material trays, and two stands for overhead banks. This provides capacity for 50 pages in approx. 1000 sq. ft. of floor space with liberal alleys between trucks and tables.

Trucks or Makeup Tables—Which?

By ELLIS SPEER*

AT VARIOUS newspaper mechanical conferences, especially with reference to the Philadelphia A.N.P.A. Mechanical Conference, the subject of the relative efficiency of trucks or makeup tables has been discussed more or less fully. The trend at the Philadelphia Conference seemed to be that several composing room executives are not sold 100% on the makeup table idea and have returned to individual truck page makeup but at the same time have adapted some of the makeup table ideas to individual truck makeup with certain modifications. The reason for differences of opinion, no doubt is that in some composing rooms the available floor space and storage requirements dictate exactly which is to be used, as is also the effort required to shift forms to and from the tables.

From time to time I have read discussions about newspaper makeup facilities in *Printing* EQUIPMENT *Engineer*. These discussions have interested me because sometimes it is quite a problem to arrange the makeup department according to the peculiar requirements of the floor area in that room and still obtain the most efficient plan. Composing Room Superintendent Ray Leach of the Omaha (Neb.) *World-Herald*, said at the Philadelphia Conference that after trying makeup tables in his plant he was 90% sold on makeup tables, but couldn't see the other 10%. Composing Room Superintendent Andrew R. Mervick of the Pittsburgh *Sun-Telegraph*, discussed makeup facilities. He stated he had rearranged the makeup equipment with makeup material located above the page trucks. Since the writer has investigated the subject, it is apparent that Old Man Local Conditions such as edition frequency, makeovers, floor space, storage and other factors govern whether or not tables or trucks will be the most efficient for any particular plant.

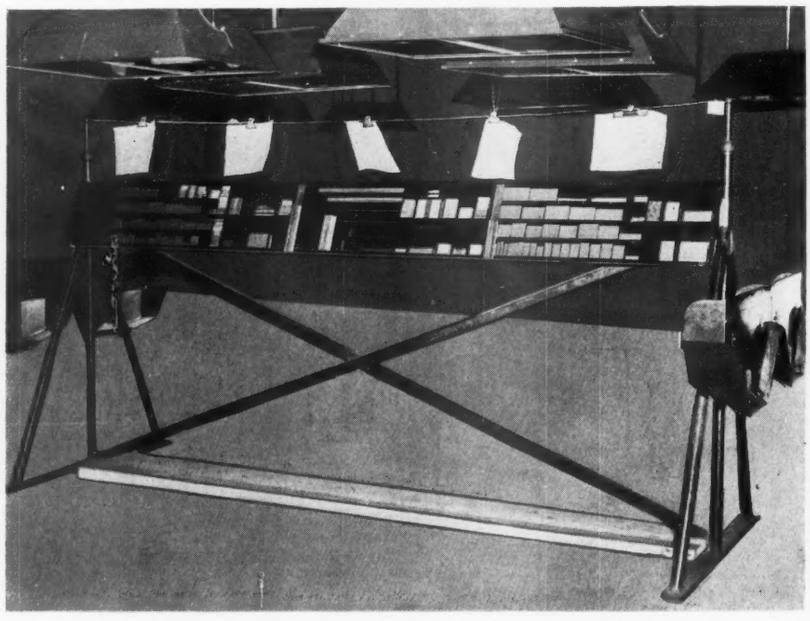
The Raleigh *News and Observer* is a morning paper. Perhaps on this account we may be prejudiced in favor of the makeup truck idea inasmuch as complete overhead illumination is an important item in a composing room where production work is done entirely by artificial light. In night composing room operation, new type and slug lines are difficult to read, especially when making corrections, unless lighting units are used which will not cast a glare from the light source into the printer's eyes. Where type must be read, we use Benjamin skylight fixtures with daylight glass. These lights were installed about 18 months ago and have practically eliminated the pulling of wrong lines of type matter and other "bulls" frequently made in correcting proofs.

After studying the problem for some time we decided that for both lighting and efficiency reasons we wanted to eliminate the overhead material trays. A friend of ours informed us that the overhead trays had been lowered in the composing rooms of New Orleans and Miami papers. In trying to improve the makeup facilities, it was necessary to utilize as much of our present equipment as possible. We drew up a design for a skeleton frame, on each side of which could be placed five trucks with the lowered material trays mounted just above the forms. This was constructed at a local machine shop and the fittings were applied in our own plant.

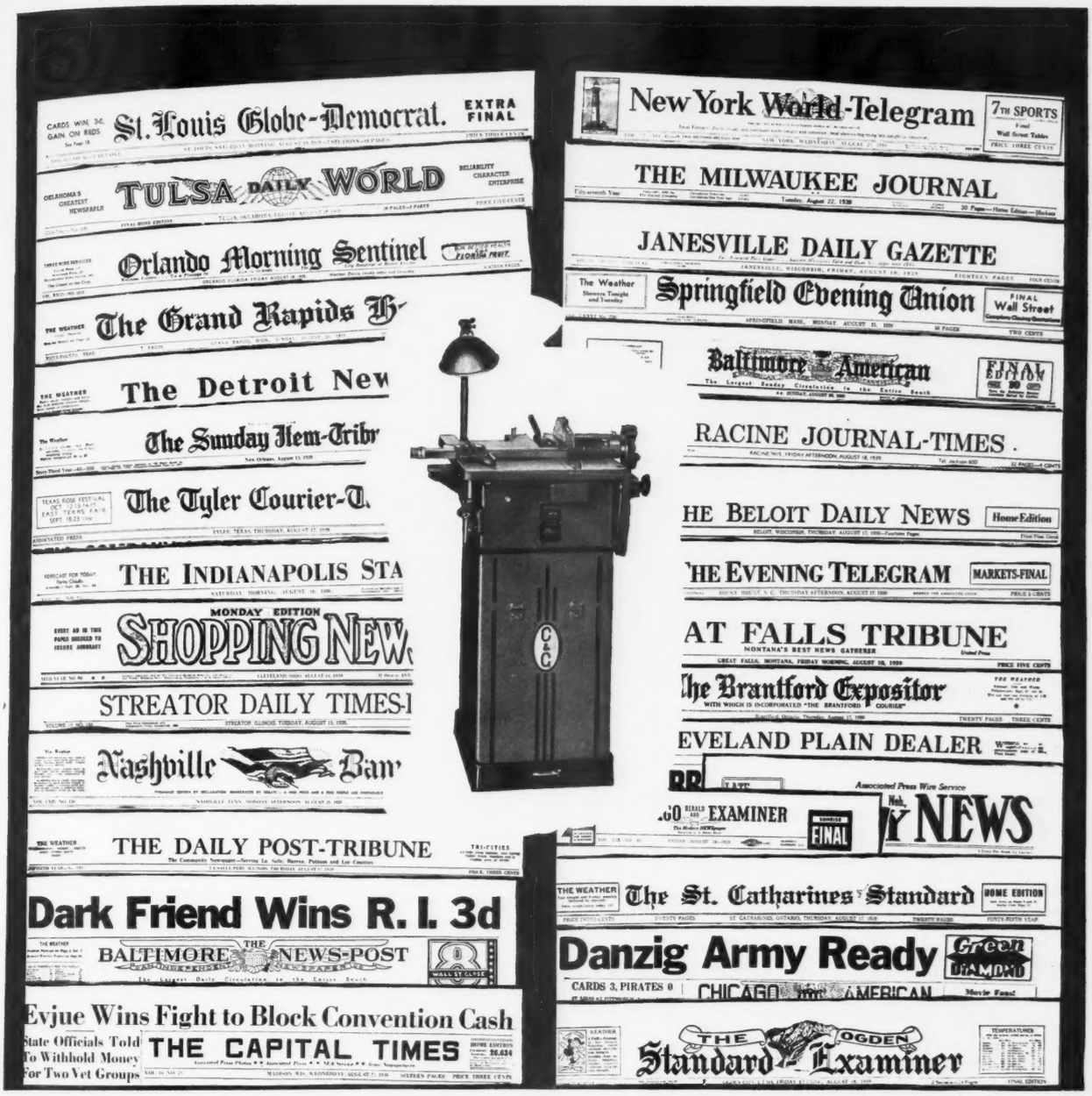
With the home-made frames we have ten forms on trucks and four dead-slug bins in a space 5 ft. by 11½ ft. The lowered material trays accommodate labor-saving column rule, leads, slugs, standing heads and various other kinds of material needed in making up a newspaper page. The stands and trucks have worked so well since trying them out that we

(*Continued on Page 104*)

Fig. 2.—Detail construction of the supporting frames for lowered overhead material trays and dead-slug bins in composing room of the Raleigh (N. C.) News and Observer. *Construction is desdribed by Ellis Speer, Composing Room Foreman, in the accompanying article. The wooden strip attached to the floor prevents a truck being pushed into its stall on one side of the stand from contracting a truck on the other side of the strip.*



*Composing Room Foreman, *The Raleigh* News and Observer, *Raleigh, N. C.*



These outstanding newspapers using C&G Model 3-A Saw Trimmers: Milwaukee Journal 8, New York World Telegram 4, St. Louis Globe Democrat 2, Detroit News 8, Tulsa World 2, Cleveland Plain Dealer 5, Chicago Herald-American 2, Indianapolis Star 2, Etc., Etc.

Many other representative newspapers as well as leading Trade Composition Houses and better Commercial Plants found C&G Saw Trimmers to be the ideal machine for their needs. Write for detailed information of this top-ranking saw trimmer and list of users in your vicinity.

The C&G Model 3-A Saw Trimmer leads them all

MILWAUKEE SAW TRIMMER CORPORATION
612 EAST CLYBOURN STREET — MILWAUKEE, WISCONSIN

Equipment

(Continued from Page 76)

Hammond Mercury TrimOsaw

In the Mercury TrimOsaw, states Hammond Machinery Builders, are incorporated many of the features of the Glider TrimOsaw, particularly the 78 pica precision mircrometer point measure gauge. On the Mercury, the gauge rolls on roller bearings. Also included is a positive single-action workholder clamp which

will hold material as short as 8 points. The table and saw arbor are of heavy construction to provide permanent table flatness and vibrationless saw operation. Ball bearing saw arbor is provided.

A 1/3 h.p. motor with V-belt drive rotates the 7 in. saw blade. Flat grinding wheel is furnished.

Floor space of 40 in. by 40 in. is required.

P-Double-E File No. 1Z.

Ornamental Border Stop

The Rouse Rotary Vertical Mitering Machine has been improved by the addition of a gauge by means of which it is possible to reduce the printing face of black-face machine-cast rule to any one of several point sizes. The gauge enables the operator of the matering machine to trim off, for instance, the printing face of 6 pt. black rule to 4 pt. face, or to a 1 pt. face.

The gauge which enables the operator to cut down the printing face of the rule is mounted at the top of the cutting wheel bracket slide bearing. The stepped gauge is graduated from *H* (which indicates hairline), then by cutting steps numbered 1, 2, 3, 4, 5, 6, 7, 9 and 12, which indicates the face left on the rule when the gauge is set at these different positions. The figure *12* step on the gauge, for instance, indicates that when a 24 pt. rule has been cut away, a 12 pt. face will be left on the rule. On an 18 pt. rule, with the gauge set at 9, a 9 pt. face will be left, etc.

The gauge is adjustable by moving it to right or left. A spring detent holds the gauge in the position for which it has been set. In the cutting wheel slide is screwed the shank for a stop to regulate the downstroke of the operating lever, which in turn determines just how much metal will be removed from the printing face of the rule.

When the operating lever is depressed, the stop contacts a step in the gauge. While holding down the operating lever, the operator slides the rule along the supporting rail in front of the cutting wheel to remove as much stock from the rule as is desired. If a considerable quantity of rule is to be trimmed down, a screw in the right-hand side of the cutting wheel bracket slide bearing may be tightened to hold the cutting there in a stationary position. In this way he may use both hands for the work.

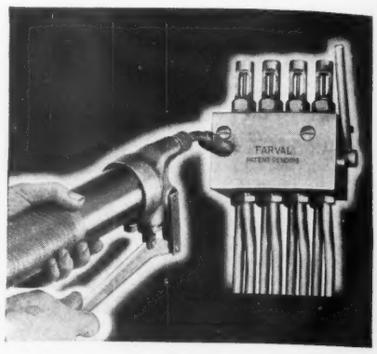
View of stepped gauge on Rouse Rotary Vertical Mitering Machine by means of which it is possible to strip down black-face machine-cast rules to smaller point size printing face. It can also be used for producing patterned borders.

Group Bearing Lubrication

A system for lubricating small machines or a group of bearings on larger machines from a single grease inlet, has been developed by The Farval Corporation. This DX Multiple Measuring Valve, combines a single inlet port with 2 to 8 outlets per block. As many valve blocks as may be needed to lubricate all bearings on a machine can be installed and connected in series.

Positive, pressure lubrication of every bearing is accomplished by connecting a conventional type of hand or power grease gun to the nipple at the inlet port. In one position of the rotary valve handle at right side of block, the valve pistons are moved by pressure built up by the gun, delivering lubricant to bearings through one set of valve outlets. When the valve handle is turned to the opposite position, lubricant pressure moves the valve pistons in the opposite direction to deliver lubricant to the other set of outlets.

Movement of the tell-tale indicator stem attached to each valve piston shows that each bearing has received its measured amount of



View of Farval DX 4 outlet measuring valve block. Conventional type grease gun is used. Blocks may be obtained with up to 8 outlets.

lubricant. The amount of lubricant delivered is individually adjustable.

It is estimated that DX Block is adaptable to installation on more than 500 kinds of production and maintenance machinery.

Cabinet Model Band Saw

The No. 1 Rouse Band Saw, which cuts a full galley of slugs to variable measures in 35 seconds, has been redesigned in keeping with the modern trend—into a Cabinet Model Rouse Band Saw.

A new streamlined cabinet replaces the original base. Though all mechanism below

the table top is entirely enclosed, provision has been made for quick and easy adjustments when necessary. Streamlining in no way interferes with working convenience.

There is ample room in the cabinet for a metal truck which catches sawdust and trimmed ends of slugs.

Complete information on the new Cabinet Model Rouse Band Saw may be obtained by writing H. B. Rouse & Company.

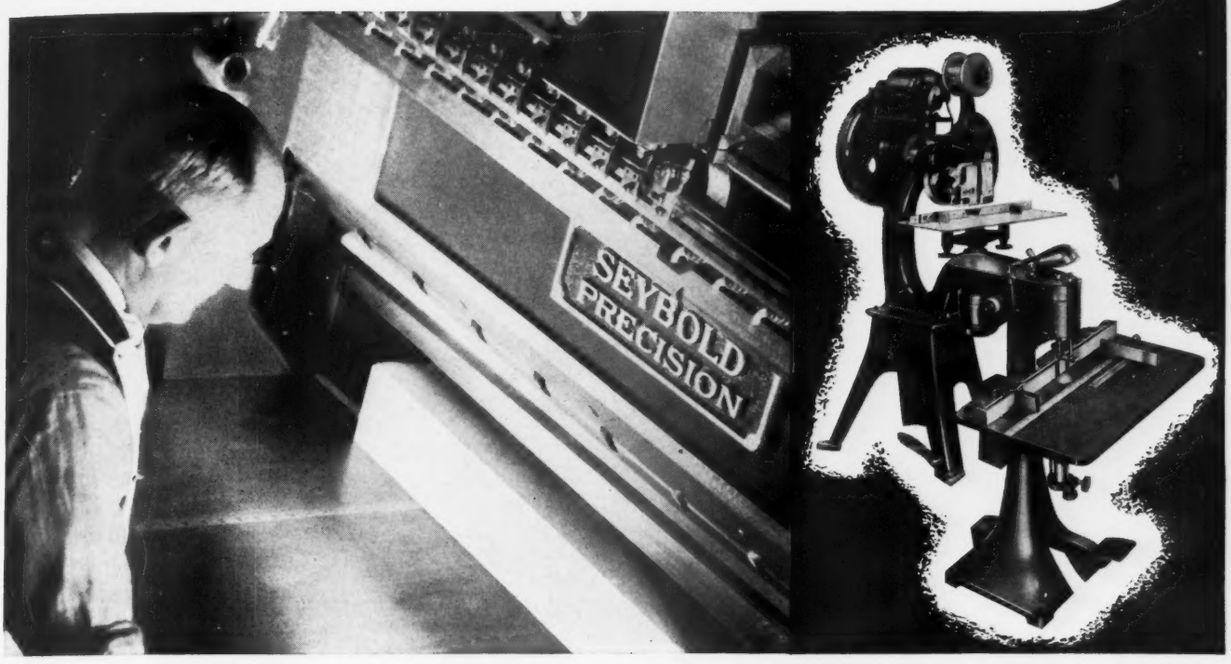
Motor Base Utilizes Spring Tension

The Ideal Motor Base automatically maintains belt tension through the action of steel springs. It is also suited to short center drives.

The base covers all types of drives, horizontal, vertical, or overhead. Operates with any type of load, pulsating, steady or reversing. Sizes range from 1/6 h.p. to 5 h.p.

(Continued on Page 87)

MEET YOUR OLD FRIENDS AT THE SEYBOLD SIGN!



● When you walk into Booth 135 at the Graphic Arts Exposition in New York, September 25th to October 7th, you'll see a lot of old friends—friends that have been helping you for years to turn out a better product at lower cost.

Seybold Cutters, Morrison Stitchers, Wright Drills —all will be there in their newest dress to greet you. Radical departures from basic design principles are still conspicuous by their absence—because Seybold years ago worked out this problem—then added the reserve strength that gives long life and lasting accuracy with low maintenance costs. But refinements have been added where experience proved they would benefit you.

So drop in and see these old friends. To say "a cordial welcome awaits you" is superfluous—our happy relations with the Graphic Arts for fifty-nine years makes it so.

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CHICAGO, ILL.: Chas. N. Stevens Co., Inc., 110-116 West Harrison Street

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TORONTO, MONTREAL: Harris-Seybold-Potter (Canada) Limited

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LATIN AMERICA AND WEST INDIES: National Paper & Type Company, Incorporated

PAPER CUTTERS • KNIFE GRINDERS • DRILLING MACHINES • WIRE STITCHERS

Paper Problems

By LETTER P. OFFGRAV*

HELPING THE PAPER MAKER

The great puzzle is "Why do papermakers keep dabbling with untried improvements? With some exceptions, paper stock, especially in the book grades, seems to get worse from one mill run to another. . . . I do want to make this observation: Outside of a small minority, the mills and their contact men do not give enough attention to how their product pleases the pressmen and shop owners. Their main thought is production at the mill—to hell with production in the pressroom! Your proposed department "Paper" should be directed "at" the mills rather than "at" the printer.

THIS question is really one question and a couple of general observations. As to the question: There is no such thing as an untried improvement. A change may eventually be an improvement, but until it is proved it is a suggestion, but not an improvement. Papermakers, in common with printers and ink makers are continually striving to make their product more uniform and more adapted to the needs of their customers.

Improvement naturally requires experimental work. It is customary in trying a suggested improvement in any grade of paper for the mill to make as small an amount of the changed paper as possible and then send it to a good printer for trial on a routine job in comparison with the paper in which improvement is desired. This test is usually duplicated in other printing plants to avoid the variables which might occur in only one plant. If the printing tests show an improvement the results of the experiment are applied in the future production of the paper in question. This method is standard with all large book paper mills. There is no reason for your correspondent getting book paper "worse from one mill run to another" if he deals with an up-to-date manufacturer.

The general observation regarding lack of attention by the mills as to how their product pleases the pressmen and shop owners is not as true today as it was some years ago. Most large mills have contact men who know printing, and who spend a good deal of their time in the pressrooms, obtaining information that will be of value in making better paper.

It is obvious that the mills cannot afford to have their contact men visit all the small printing plants in the country. The expense would be out of all proportion to the results obtained. The best method is the one usually followed. The contact men follow up the paper on the long run jobs, where pressroom variables can be reduced to the minimum and paper quality controlled better than on small runs. The information so obtained is applied in the manufacture of all paper at the mill, no matter whether it be for a big production job or for stock to be sold in small quantities to individual printers. It can be appreciated that in this manner the small printer receives the benefit of such work even though the contact man may never visit his plant.

The final statement as to the mills giving no thought to the problems of the printer is in my opinion incorrect. I have spent more years in the printing business than in paper, and it is my personal opinion that the papermakers pay far more attention to the printer's requirements than most printers do to the requirements of their customers. I have seen papermakers more than once remake an entire order of paper rather than ship out what they felt was inferior, but I cannot remember of a printer reprinting a job because it was off color or out of register even before the customer saw it.

One suggestion to all printers: When the contact men come into your plants, have something definite to tell them if the paper is defective. Just to say it is "lousy" is of no assistance. Keep samples to show the defects, and do not fail to keep a record of the skid or roll number from which the sample was taken. This gives the paper maker a chance to go over his records and determine what may have caused the trouble. I do not want this to appear as though the paper is not at fault at times, but when it is, give the paper man all the assistance and information possible so he can eliminate the defect from subsequent shipments.

**Another in a series in response to problems propounded by mechanical and production executives in a questionnaire sent out by* Printing Equipment Engineer. *Mr. Offgrav will reply to additional problems in future issues.*

July Kluge Installations

12x18 Automatic Press. Rose-Weis Printing Co., Inc., Springfield, Ill. Sokol Imprint Service, Inc., Chicago, Ill. *The Kentucky Kernel,* University of Kentucky, Lexington, Ky. De Hardt Printing Co., Independence, Mo. Hotel Davenport Print Shop, Davenport, Iowa. Smith Printery, Davenport, Iowa. Aurora (Mo.) *Advertiser.* Levy Printery, Paterson, N. J. Centrall Hudson Publ. Co., Wappingers Falls, N. Y. William J. Kline & Son, Inc., Amsterdam, N. Y. Leading Print Shop, Albany, N. Y. Torbett Printing Service, Okmulgee, Okla. O'Neal & O'Neal Prtg. Co., Huntsville, Ala. San Carlos (Fla.) *Press.* The Record Publ. Co., Zebulon, N. C. Esterbrook Steel Pen Mfg. Co., Camden, N. J. Albrecht Printery, Scranton, Pa. Van Fleet & Son, Philadelphia, Pa. First National Bank, Pittsburgh, Pa. The Midvale (Utah) *Sentinel.* Clifford Ware, Huntington Park, Calif. Don E. Hunt, Southgate, Calif. The Galahad (Maine) *Press.* The Connecticut Calendar Co., Meriden, Conn.

12x18 Kluge Feeders. Rucker-Stark Printing Co., St. Louis, Mo. Fiset Commercial Printers, Albany, N. Y.

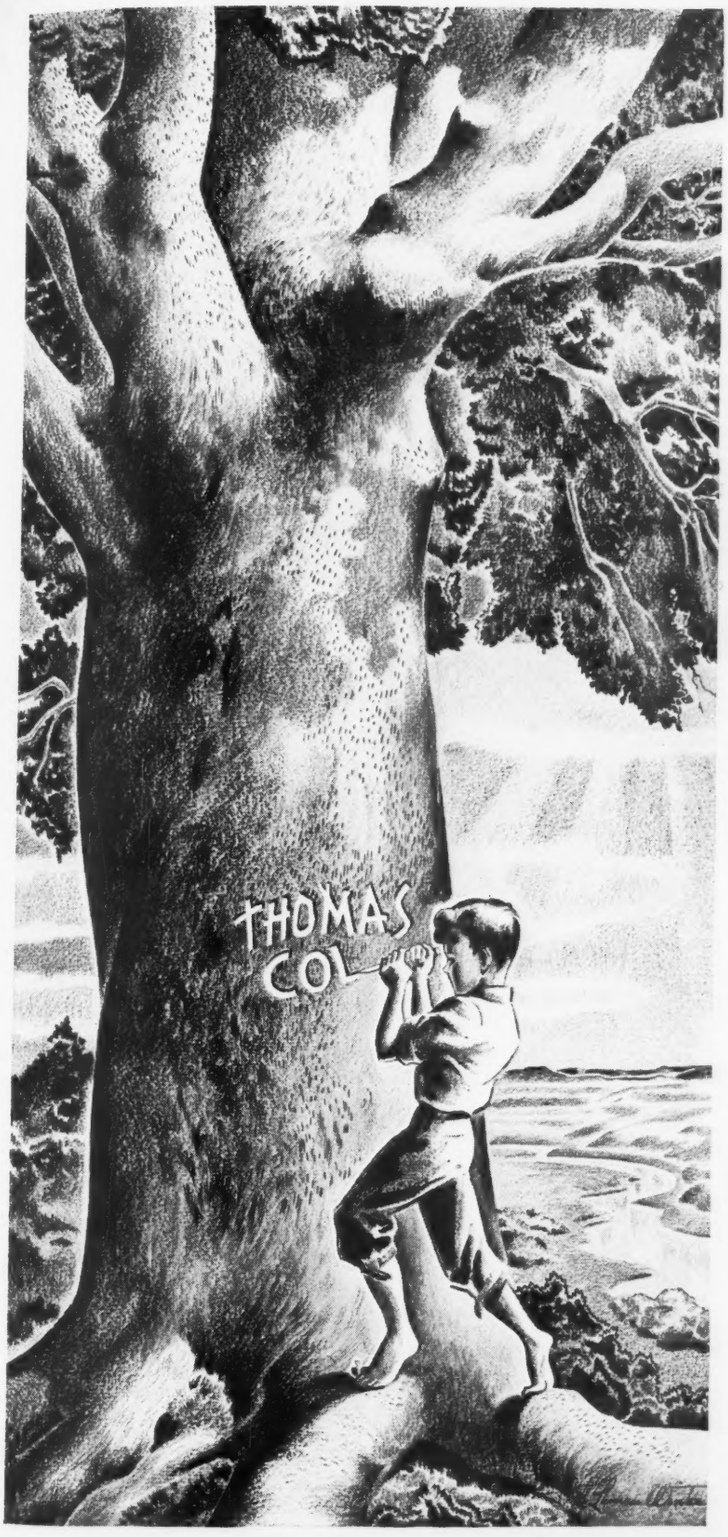
12x18 Kluge Combination Die-Cutting and Printing Presses. Columbia Paper Prod. Co., Inc., Portland, Oregon. Lee Paper Box Co., Philadelphia, Pa.

10x15 Kluge Automatic Presses. Buhl Sons Co., Detroit, Mich. Pease Printing Co., Dallas, Texas. Globe Prtg. & Supply Co., San Francisco, Calif. North Hills (Pa.) *Press.*

10x15 Kluge Feeders. The Dandy Print, Los Angeles, Calif. The Knowlton & McLeary Co., Farmington, Maine.

4 Roller Kluge Automatic Presses. Federal Prison Industries Inc., Leavenworth, Kansas. Sun Printing Co., San Fernando, Calif.

Kluge Open Presses. Whiting Press, Inc., Rochester, Minn. Woodsboro (Texas) *News.* The Denison Mfg. Co., Ashville, N. C.



Carve a name for yourself on CHAMPION PAPER

MORE lasting even than names cut deep in trunks of trees, are favorable impressions that advertising makes in minds of men. Where once he left his name for those who chanced to pass, today a man multiplies his message countless times and sends it out to fight for him.

Champion has the largest line of printing papers anywhere available. Constant growth over forty-five years is evidence of Champion's skill. Whatever your customers require, you can give them the most for their advertising dollar and bring repeat business to yourself, by using Champion paper, the foundation for good printing.

THE CHAMPION PAPER AND FIBRE CO., Hamilton, Ohio

MILLS AT HAMILTON, OHIO . . . CANTON, N. C. . . . HOUSTON, TEXAS

Manufacturers of Advertisers' and Publishers' Coated and Uncoated Papers, Cardboards, Bonds, Envelope and Tablet Writing . . . Over 1,500,000 Pounds a Day

DISTRICT SALES OFFICES

NEW YORK · CHICAGO · PHILADELPHIA · CLEVELAND · BOSTON · ST. LOUIS · CINCINNATI

Circle the numbers on the coupon indicating the literature or information you want. Supply your name, title, department, firm name and address—we do the rest. Manufacturer or Supplier will send you information or literature about the equipment or supplies you request. Use this free service.

PRESSROOM

1 PAPER—"Constant growth over forty-five years is evidence of Champion's skill." The Champion Paper and Fiber Company will be happy to send you further information on their products.

2 PRESSES—The Meisel Press Company invites you to investigate their presses. Coupon brings booklet.

3 OFFSET GUN—American Type Founders discuss the new Diafram Gun in their ad. in this issue. Ask your ATF salesman for details, or use the coupon at the bottom of the page.

4 ZEPHYR BLACKS—These inks have been perfected in three grades by Sinclair & Valentine Co. for halftone printing and printing on S. & S. C. stock and for printing on coated stocks. Descriptive folder available upon request.

5 OFFSET PRESSES—"Harris performance reflects craftsmanship." Harris presses are made to produce the "greatest number of salable sheets." Litho chemicals have been developed by Harris for deep etch and several plate making processes.

6 CYLINDER PRESS—"The Lee two-revolution cylinder press" states the Challenge Machinery Co. "will enable you to talk price and quality in the same breath . . . you can give your customers the finest printing . . . and still show a good profit." Write for further details and prices.

7 INKS—Howard Flint Ink Company's products are "dedicated to better printing everywhere." Company will be glad to explain its products to you.

8 ROTARY COLOR PRESSES—Manufactured by C. R. Cottrell & Sons Co. are illustrated and described in the Cottrell advertisement in this issue. Shown are five-color rotary press, Claybourn two-color press, and Cottrell rotogravure press. Company will gladly send information upon request.

9 INK—William C. Herrick Ink Co. offers booklet describing its line of inks.

10 ROLLERS—Sam'l Bingham's Son Mfg. Co. offers interesting data on its complete line of printers rollers.

11 LUBRICATION—"Where improved machine performance, less maintenance and lower costs are essential, specifications include Bijur." Coupon brings data.

12 TYMPAN—"A low priced Tympan with a hard even surface and exceptional strength." Riegel Paper Corporation will send samples.

13 ROLLERS—Let the Rapid Roller Co. forward interesting free literature on its Mercury rollers to you.

14 POWER TRUCKS—"With Elwell Parker center-control trucks you can handle newsprint and coated stock at greater speed and accuracy." Details.

15 BEARINGS—"Miles of Smiles for every user of Timken Roller Bearings." Find out more about bearings. Fill out coupon.

16 NEW PRESS—"New Brandtjen Kluge "AP" Press handles any job from onion skin to ¼-inch board; tags and booklets to odd shaped, died out pieces." Booklet will be mailed to you.

17 ELECTRIC EQUIPMENT—"For any type of press—machinery or plant electric equipment, refer to the G-E office near you for complete service in selecting modern electric equipment for your plant."

18 ROLLERS—"Rollers for special printing processes—rotogravure, aniline, coating, varnishing or gluing—have been developed by Ideal Roller & Mfg. Co. Coupon brings booklet on the latest developments.

19 PRESS—Turn right at the Exposition for ATF's exhibit. "See the Webendorfer offset newspaper press produce an eight page tabloid newspaper at 14,000 an hour."

20 BEARINGS—SKF discusses the use of their bearings on the largest and fastest two-color magazine press in the world. See the ad on page 24. Use the coupon for further data.

21 CYLINDER PRESS—You are cordially invited to inspect the Miller Automatic Press at the Miller exhibit in the Graphic Arts Exposition. If you are not going, fill out the coupon for information.

22 INKS—Morrill states "Whether your problem is inking newsprint at high speeds—or printing burlap bags, there is a Morrill ink created to do that job at lowest real cost."

23 PRESS—"Goss presses are backed by a dependable service policy that assures prompt, efficient attention to any call, any time, anywhere." Use the coupon.

24 INKS—IPI discusses the use of "Vaporin" inks in their advertisement this month. For further details, use the coupon.

25 ROLLERS—"American Rollers are treated in scientific storage room under temperature accurately controlled by modern scientific apparatus." Let the American Roller Co. send you more information on their product.

26 BEARINGS—"'Cartridge' Ball Bearing carries within itself its own extra reserve supply of lubricant," states Norma Hcffman Bearing Corp. Free catalog will be mailed to you.

27 ROLLERS—"In addition to unusual durability, Dayco Rollers have the right consistency and affinity for properly distributing and depositing ink. Presses can run at top speeds under any climatic condition."

28 PRESS PACKING—"Experience proves that better printing depends to no small degree upon the selection of a packing with resiliency and rate of 'comback' that keeps pace with press speed." Goodyear Rubber Co. will forward data to you.

29 FEEDER—"For a profitable visit at the show—see the Christensen Continuous Suction Stream Feeder in action." Coupon brings information.

30 PRINTING PRESS BLANKETS—Tingue Brown & Co. enumerate the various kinds of press packing supplied by them. Samples and prices upon request.

31 NUMBERING MACHINES—for rotary presses are described in Wetter Numbering Machine Co. advertisement in this issue. Full information will be furnished by **Wetter** upon application.

32 "DOYLE ELECTRIC SHEET HEATER," says the J. E. Doyle Company, "prevents offsetting, reduces static electricity, reduces paper spoilage, keeps air pure and reduces fire hazard." Further details from ATF branch selling house, or use the coupon.

COMPOSING ROOM

33 CUT CEMENT—"Speeds up production—holds tight—will not deform printing level." E. A. Booth Rubber Co. will send you sample.

34 SAW TRIMMER—Circle this number on the coupon. The Milwaukee Saw Trimmer Company will send information on their "C&G Model 3-A," with a list of users in your vicinity.

35 SAWS AND SAW SHARPENING—Automatic Saw Sharpening Co. explains its saw sharpening service coupon system and also quotes prices for sharpening all kinds of printing equipment saws, composing machine knives and discusses its line of new saws. See page 61.

36 SLIP OFF INGOT—"Slips off the hook automatically when it reaches the part where in the old style ingot the hot tip had to be taken off by hand." United Americam Metals Corp. offers informative booklet.

37 ELECTRIC METAL POT—"Star" electric pot saves 40% in electric consumption—no control box." Linotype Parts Co. will send circular.

38 HAMILTON MFG. CO.—will be happy to see you at its booth No. 108 at the exhibition.

39 SAW TRIMMER—"Priced so low you can afford to trade in your old saw now." Hammond Machinery Builders will send descriptive circular.

40 MATRIX CONTRAST SERVICE—Booklet will be sent to you—gives specific information and names of users in your vicinity. "One third of all your machine errors can be eliminated." Fill out coupon completely.

41 METAL—"Blatchford Metal is always reliable, and because of its reliability, it actually is the cheapest metal you can buy." Circle this number on the coupon for more information.

42 MAT CLEANING PROCESS—"The Klean-O-Mat Process combines the three essentials of a cleaning method—rapid cleaning, perfect cleaning and safe cleaning. There is a Klean-O-Mat machine model for every size of plant." Details.

43 ROUSE BAND SAW—has been redesigned, modernized, and streamlined. Manufacturer states the new saw looks as "fast as it is." Illustrated circular will be sent by H. B. Rouse & Co.

44 MOLD DISKS REBUILT—for Linotype machines. Makes for a number of models of Linotypes furnished by Montgomery & Bacon who will be glad to send you the company's new 108 page spiral-bound catalog free for the asking.

45 YOU ARE INVITED—Lanston Monotype Machine Company invites all lithographers, typographers and printers attending Conventions in New York to visit the company's booths at the National Graphic Arts Educational Exposition, Sept. 25 to Oct. 7.

46 FORM FILE—"Electro-Hydraulic operation built to the highest standards. You can file a form a minute." Sta-Hi Corp. will send details. Fill out the coupon at bottom of page.

47 TYPESETTING MACHINE—"Linograph "50" brings a new standard of efficiency to the composing room. Suitability of this machine for Teletypesetter operation is impressive." A complete catalog will be sent to you by the Linograph Corp.

STEREOTYPE DEPT.

48 DRY MATS—"For dependable stereotyping, rely upon Certified mats." Use the coupon to get information.

49 NEW MATRIX PRESS—Circle this number on the coupon. Stereotex Machinery Co. will send you details on its new direct pressure Matrix Press . . . For either cold or hot moulding.

50 STEREOTYPE FELT—"Flex-O-Felt," states American Publishers Supply, "conforms to every contour of the mat—will not curl, crack or crystallize." Details will be sent you.

51 NEW DRY MAT—Flexideal Dry Mat Corp. will send you samples of its new Flex mat. Specify gauge, shrink, and casting equipment.

52 AUTOSHAVER—"The Wood Heavy-Duty Autoshaver is designed for the handling of stereotype plates on a mass production basis." Printed matter will be furnished.

53 DRY MATS—"The quality of Burgess construction gives a durable mat that does not break down in molding or casting."

54 FORM-O-SCORCH—manufactured by American Publishers Supp'y for the sterectype department—has direct heat, thermostat, temperature control, adjustable cover tension, pilot light and timer. Booklet will come to you.

55 GUMMED PACKING FELT—for use under any atmospherical condition is advertised by Eastern Newspaper Supply. Company states "all gauges are uniform, easy to tear, sets instantly, and does not slip." Free samples for the asking.

56 DRY MAT—Wood Flong Corporation will gladly send you a free sample lot of its dry mats.

57 MAT CASTER—Descriptive circular on "full page automatic locking flat caster with 800 lb. valve controlled metal pot."

58 THE SERVICE BOX—for maintaining scorcher temperature in the mat until the stereotyper places it in the casting box—fastens in handy box in the furnace or casting box. Information, details and prices will be sent gladly by Eastern Newspaper Supply.

59 IMMERSION MELTING—"Kemp will install Immersion Melting in your plant and give you thirty days to judge its efficiency . . . Saves 40% or more in stereotyping fuel." Further details.

MISCELLANEOUS

60 CUTTERS AND STITCHERS—The Harris-Seybold-Potter Company offers you a cordial invitation to visit Booth No. 135 while you are visiting the Graphic Arts Exposition. Circle this number on the coupon if you wish to receive information on Seybold products.

61 ENGRAVING EQUIPMENT—R. R. Robertson Furnishes complete photo-engraving plant including cameras, lights, screens, etching machines, vacuum frames, temperature controls, and plate whirlers, Further information upon request.

62 TRIMMING KNIVES—"A high quality knife insures your getting full value out of your trimmer." Simonds Worden White will help you select the proper knife for your requirements.

63 AUTOMATIC CUTTER—See the Chandler and Price advertisement on pages 30 and 31 for a description of their products. The coupon at the bottom of this page will bring you further details.

64 PLASTIC BINDING—"Improved to the point of perfection." Sample kit of rolled combs and color swatch will be sent to you.

65 DETAILS—on Imperial Type Metal Company's plus plan will be sent to you. "Controls metal quality scientifically."

66 ZINC—"The Atlantic Zinc Works introduced the electric induction process in the manufacture of engravers plates." Information will be sent on their products.

67 MOTORS AND CONTROLS—Cline Electric Mfg. Co. states: "Tell us your problems—our engineers have the experience and facilities to serve you."

68 MARGACH MFG. CO.—states in their advertisement that its representatives can assist in equipping the modern printing plant with new and used machinery to your complete satisfaction. Let them help you with your problems.

69 MERCURY LAMP—"The long-tube Cooper Hewitt Mercury lamp makes it possible to obtain high levels of illumination without the presence of direct or reflected glare." General Electric Vapor Lamp Company will send you booklet.

70 PRINTING MOTORS—Kimble Electric Company discusses the modern designs of its motors which are built especially for driving printing equipment. Details will be furnished either by Kimble Electric Company or American Type Founders.

71 COES MACHINE KNIVES—Loring Coes & Co. make micro ground knives for all kinds of printing operation. The company will gladly send description and specifications of its products upon application.

72 BLANCHARD PULSOLATOR—Rivett Lathe and Grinder, Inc. states that the Pulsolator system is suitable for automatically lubricating every type and size of printing press. Manufacturer states Pulsolator reduces oil consumption 60%. Write for Bulletin B-30.

73 JUSTRITE SAFETY CANS—for storage of explosive and flammable liquids in the printing plant. Sizes made to meet all requirements. Company also manufactures oily waste cans for reducing fire hazards. Write for copy of free booklet.

74 ROTOGRAVURE EQUIPMENT—from camera to pressroom furnished by Standard Process Corp. This firm is also licensor of the Ballard cylinder plating process. Will also send information about the new Wale rotary press.

75 MECHANICAL AND PRESSROOM SUPERINTENDENTS—can add to their income by getting in touch with Box 939 Printing EQUIPMENT Engineer, who will put them in touch with manufacturer of a nationally distributed pressroom necessity. Investigate.

This coupon must be filled out completely in order to secure the literature or information you request. Circle only those bulletins you particularly want.

PRINTING EQUIPMENT ENGINEER September
1276 West Third Street, Cleveland, Ohio

Without obligation please have the manufacturers send me literature or information circled below. (These numbers correspond to numbers on descriptive paragraphs).

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75					

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NAME.....TITLE.....DEPT.....

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FIFTH PRODUCTION YEAR BOOK—A sort of encyclopedia or text book about all printing processes and production matters. Invaluable to mechanical executive and production man. Lots of color. Bound in cloth, silver stamped, 424 pages, 8½ in. by 11¼ in. Price $5 cash with order.

ENCYCLOPEDIA OF LITHOGRAPHY—*Compiled by Russell L. Miles.* Besides technical information about all details of offset-lith set forth in simple language, this book contains discussions on various phases of offset-lith by well known writers. Bound in blue cloth, gold stamping. Illustrated. Size 6 in. by 9¼ in., 212 pages. Price $4.50 per copy cash with order.

ETCH PROOFS—*By J. H. Bartz.* Booklet, approx. 6 in. by 9 in., 40 pages and paper cover. Tells reasons for and how to take reproduction proofs. Price, $2.00, cash with order.

HANDBOOK FOR PRESSMEN—*By Fred W. Hoch.* Book written by authority on all phases of flat-bed letterpress production for the practical pressman. Contains 248 pages, 26 illustrations and 24 charts. $3.00 per copy, cash with order.

THE PRACTICE OF PRESSWORK—*By Craig R. Spicher.* We offer copies to our readers at the special price of $4.00 per copy, cash with order. No printer should be without a copy (9000 copies printed).

MANUAL OF STEREOTYPING—*By Joseph Goggin.* This 256-page book conveys latest technical information and manipulating procedure. Written by a practical stereotyper. Price $5.00, cash with order.

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1276 W. Third Street Cleveland, Ohio

"Stuck" Plungers

The first and most important consideration in keeping metal pot crucible plungers in line-composing machines from sticking is to clean both well and plunger religiously. This applies especially to new machines and those machines which have not been used for any great length of time. Another important consideration is to see that the relief valve opening in the bottom of both Linotype and Intertype plungers is clear to permit the plunger to make a complete downstroke when it pumps metal into the mold. Complete plunger downstroke will prevent the formation of a dross ring in the well. A dross ring is formed part way down the inside surface of the well when an operator works on short-measure, small-bodied slugs. Then when he changes over to wide-measure, large-bodied slugs the plunger cannot make a complete downstroke because of the stroke stoppage caused by the dross ring. The pressure relief valve (Linotype) or the pressure relief hold (Intertype) prevent the formation of the dross ring by relieving the pressure set up by the metal against the downstroke of the plunger, consequently the plunger sinks to the limit of its stroke and keeps the well wall clean.

If the worst should happen, due to neglect in cleaning both plunger and well during every shift, and all other means fail, a plunger may be removed from the pot crucible well by baling metal from the crucible until the level is below the feed holes in the well wall. Then dip out with an improvised spoon of some kind as much metal as possible from the depression in the top of the plunger. Put some cold water in a long spout oil can and squirt the water into the depression in the plunger. Using a wrench on the plunger rod, quickly twist the plunger and lift it upwardly. While doing this, it is best for the machinist to wear a pair of cotton gloves and he should also turn down his shirt sleeves to protect the wrists. In most cases all that will happen from the careful injection of cold water inside the plunger will be the creation of steam. However, it is best to protect the hands and wrists of the one doing the job. The water contracts the plunger to make its extraction easy. And don't let there be a "next time." Keep the plungers and crucible wells clean.

"Contact"

(Continued from Page 62)

less to say, contact suffers, for even opaque used against a halftone tint often will cause unexpected difficulties. This is to be expected when such thin membranes as strip film or wet plate cannot be stripped under tints without the edges leaving a mark in the screen tint area.

Contact may be checked on photo-composing machines by the pressure or vacuum gauge in addition to observing the contact action between the photographic material and the press plate with a hand lamp. Yet, despite these precautions, with everything visually under control, out-of-contact spots will be manifest in an occasional plate. Plates with kinks or buckles simply will not flatten out under vacuum and yield sufficient contact with work aimed for those parts. These kinks must be pressed out from the reverse side of the plate to get this flat surface necessary for contact. Much greater leeway is permissible in the vacuum printing frame in these respects for there the light is more than a yard away from the frame and the exposure nearly ten times that used in the composing machine with its light source not much more than a foot away from the plate. Yes, this matter of contact surely transcends party lines in photo-lith work.

Contact in photo-lith work involves the refraction of light rays. Every time light rays enter another medium some bending occurs. Nearly every material has a different index of refraction, which is only another way of saying that light travels slower or faster through the particular material than through air. The indices for glass may vary. Crown Glass has an index of refraction of 1.51, while Flint Glass has an index that may run from 1.54 to 1.71. The angle a ray may bend is easily computed, knowing the index of refraction of the material entered. From this it may be seen that when an obstruction permits a space to exist between the photographic material and the sensitive coating, the light rays bend on coming out of the film and, upon entering the air or even partial vacuum, cause undershooting. This causes a heavy mass or a closeout of the dots, depending upon whether albumen or glue is used as the sensitive coating. It is safe to acknowledge that the edge of any material, stripped under another, no matter how thin it may be, will always form a shoulder that no vacuum can pull a press plate against to get perfect contact. And if it did, the plate would be full of indentations.

Contact is almost the entire story of the offset press. Contact in proper proportion must be doled out to all of the rollers, dampers, cylinders, feed cams, feed rollers, sheet suckers, grippers and all the other mechanical parts of the press. It plays the greatest role, however, in the actual lithographing of the sheet. Here contact must be regulated so that pressure between the press plate and the rubber blanket be limited to a range of from 0.003 in. to 0.005 in. Greater pressure leads to a wearing of the work; less pressure leads to poor impressions. The back cylinder, too, must be brought into correct contact with the blanket, making allowance for the stock being run, so as to give the paper or the stock printed upon, enough squeeze to yield the beautiful lithographs.

"Dry mats are NOT all alike!"

If you think dry mats are a "standard product"—one brand just about the same as another—you'll get a pleasant surprise when you try FLEX dry mats. Why not try them now? Samples will be sent to you, no charge, on request. When writing please specify gauge, shrink, and casting equipment; and address Flexideal Dry Mat Corporation, 21 West Street, N.Y.

FLEX
All-American
DRY MATS

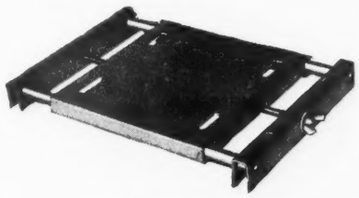
Equipment

(*Continued from Page 80*)

Models up to 50 h.p. will be available before long.

To take up slack in belts from normal wear and stretch, an adjusting screw may be given a few turns. Spring tension holds the motor, takes up slack and cushions load shock.

The Ideal Base is constructed of steel. Installation is accomplished by mounting the



View of Ideal Motor Base

motor on the sliding plate of the base. The motor and base are then bolted down as a unit.

To change belts, the spring tension is released to take off the belt and the new belt is then passed around the sheaves.

Further information may be secured from the Ideal Commutator Dresser Company direct or in care of *Printing* EQUIPMENT *Engineer.*

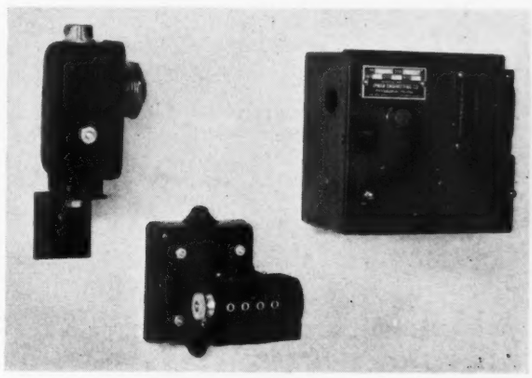
Counting Equipment and Relay

For counting duty up to 6000 counts per minute, Lipman Engineering Company announces Model 566 Photo Electric Counting Equipment and General Purpose Contact Relay, Type 566. The Photo Electric Amplifier Contact Relay Unit, Terminal Board, Power Transformer for Amplifier and Light Source are all mounted as integral parts of the Photo Electric Amplifier Unit cover. The Photo Cell is mounted 4 in. from opening to minimize the effects of stray light. One tube of standard type is used, having within it both Rectifier and Amplifier elements. Operation is by direct current which allows maximum sensitivity and ease of maintaining adjustment. A sensitivity control is provided so the unit will operate on visible or invisible light.

The Control Relay is plug-in type and can be removed the same as a tube for inspection or replacement. A pair of contacts is provided on the Relay which are closed when light is on the cell. When the light is cut off from cell these contacts open and an additional pair of contacts close. The contacts will make or break and carry 3 amp. at 110 volt a.c. Estimated tube life 7000 to 10,000 hours.

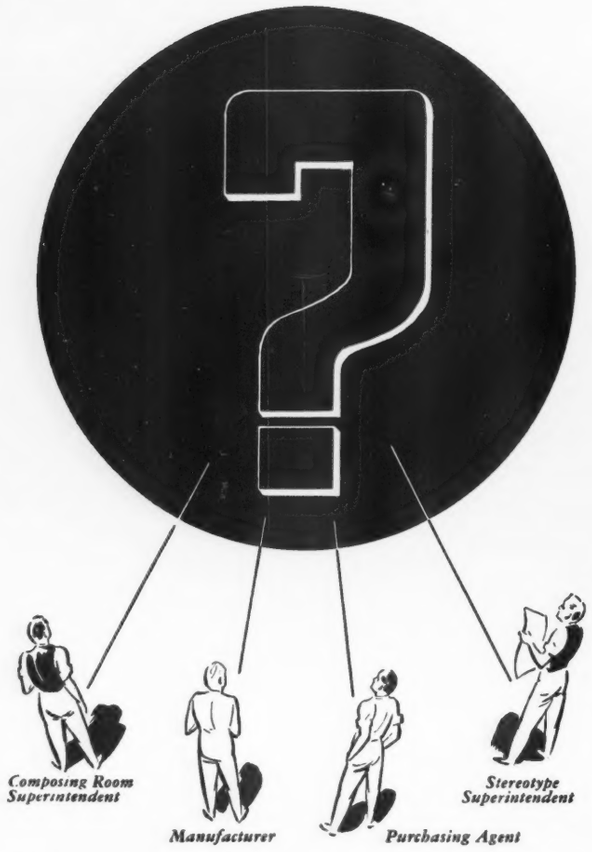
The Model 566 Photo Electric Counting Equipment is tested for speed of counts up to 600 per min. and is supplied complete with four-digit counter and Light Source.

Lipman Engineering Company's new Photo Electric Counting Equipment and General Purpose Contact Relay. At upper left is light source, at right is the Relay and lower left shows 4-digit counter.



In-Stock Ink Sample Book

J. M. Huber, Inc., has published a 5½ in. by 9 in. In-Stock Ink Specimen Book. The book, states manufacturer, illustrates as complete a range of letterpress colors and black inks, as well as compounds, as is required in the average printing plant for ordinary job and cylinder press work. Catalog was printed under normal commercial conditions. A feature of the book is that the relative fastness to various elements and conditions of each ink is indicated. *P-Double-E File No. 5W6.*



Who takes the Responsibility for Type Metal Performance?

There is no buck-passing of the responsibility for metal in the Imperialized plant. As soon as the first pound of Imperial Metal enters a shop, Imperial Type Metal Company assumes the unconditional responsibility for that metal's performance.

The Imperial Plus Plan makes this possible because it keeps the working supply of metal in ideal condition at all times. Regardless of the mat or type of casting box used, Imperial Metal permits the production of solid plates and sharp faces—the kind your department can be proud of.

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More Casts From One Mat

The quality of Burgess construction gives a durable mat that does not break down in molding or casting.

205

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Manufacturers and Distributors of Burgess *Chrome* and *Tone-Tex* Mats

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426 Polson Bldg. Seattle, Washington

Patents

Recently Granted by U. S. Patent Office

Bookbinding:

2,168,035. SEVERING DEVICE FOR USE IN BOOKBINDING AND OTHER OPERATIONS. Alfred James Kitcat, Limpsfield, England, assignor to Flexiback Machinery Company Limited, Battersea, London, England, a British company. Application January 10, 1939, Serial No. 250,099. In Great Britain January 4, 1938. 8 Claims. (Cl. 164—68).

1. A device for severing moving strip material or the like comprising a rotary cutting knife pivoted about an axis perpendicular to the axis of rotation and spaced in the direction of the moving strip material, and means for moving the knife into and out of engagement with the strip material and for moving the knife in the direction of travel of the material when in severing engagement therewith, the means including a continuously rotating gear ring, a pawl associated with the gear ring and intermittently driven thereby, a crank arm driven by the pawl, and a connecting rod operatively connecting the crank arm with the knife.

2,168,865. DEVICE FOR BINDING BOOKS AND SO FORTH. Hermann Fischer, Thalwil, Zurich, Switzerland. Application March 15, 1934, Serial No. 715,741. In Germany March 18, 1933. 10 Claims. (Cl. 11—1).

10 A device for threading a spiral binding element through the perforations of a stack of sheets to be bound, the device comprising means for causing the advance of the successive portions of a spiral binding element along a predetermined path and thereby positively causing the successive portions to conform to a predetermined contour, means for positioning the perforations of the stack in threading relation to the coils of the advancing spiral, the advancing means comprising a pair of elements spaced so as to receive therebetween the stack to be bound and to hold the sheets of the stack against separation, the apparatus also having automatic means for stopping the advance of the spiral at a predetermined point.

2,169,114. BOOK GLUING MACHINE. Henry Sieb, Hammond, Ind. Application August 31, 1938, Serial No. 227,695. 17 Claims. (Cl. 91—13).

1. A machine for applying glue to the back edges of books, comprising a support on which the books may stand upright on their back edges, means to move the books across the support, means to apply glue to the under edges of the books when the books reach a predetermined position on the support, means to jar the books and cause the leaves to settle themselves properly, and guide means for the books holding them loosely while being jarred and compressing them somewhat adjacent to their rear edges while the glue is being applied.

Composing Machines:

2,166,170. SLUG-CASTING MACHINE. Richard R. Mead, Queens Village, N. Y., assignor to Mergenthaler Linotype Company, a corporation of New York. Application September 18, 1936, Serial No. 101,405. Renewed November 10, 1938. 32 Claims. (Cl. 199—50).

1. A slug casting machine including, in combination, a pair of line clamping jaws, one movable toward and from the other to quad out a short line of matrices and expansible spacebands positioned between them, a banking element, and a plurality of spaced stops associated with the jaw and adapted selectively to cooperate with the banking element and arrest the jaw in its outward movement in different predetermined line justifying positions, the stops being selectable each by lines varying in length within a range allowing for normal expansion of the spacebands in the line.

2,166,719. TYPOGRAPHICAL SLUG CASTING MACHINE. Herbert Ellis, Shanghai, China, assignor to Linotype and Machinery Limited, London, England, a limited liability company of Great Britain. Application January 22, 1938, Serial No. 186,331. In Great Britain March 9, 1937. 15 Claims. (Cl. 199—49).

1. A typographical slug casting machine comprising means for receiving a hand-composed line of matrices to be inserted therein, means for conveying the line to a slug casting position; means for casting a slug against the matrices, and means for thereafter returning the line to a stationary support within easy reach of the point of insertion.

2,166,726. TYPOGRAPHICAL COMPOSING MACHINE. Richard R. Mead, Queens Village, N. Y., assignor to Mergenthaler Linotype Company, a corporation of New. York. Application February 4, 1938, Serial No. 188,603. 15 Claims. (Cl. 199—27).

1. In or for a typographical composing machine, matrix assembling mechanism including, in combination, an assembler, a partitioned entrance and a chute through which the matrices pass to the assembler for composition in line, upper and lower cover plates constituting a wall for the entrance and chute, and means for locking the cover plates together, the locking means being located entirely without the plane of the inner faces of the cover plates so as not to interfere with the passage of the matrices through the entrance and chute.

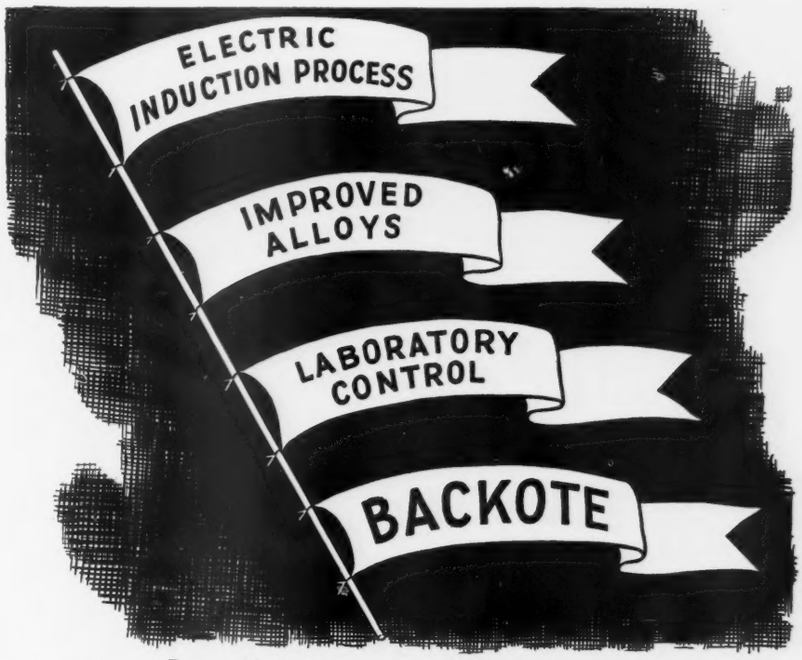
Feeding, Folding, Delivery:

2,166,272. SHEET FEEDING APPARATUS. Frederick W. Storck, Arlington, Mass., assignor to Standard Mailing Machines Company, Everett, Mass., a corporation of Massachusetts. Application March 26, 1938, Serial No. 198,283. 41 Claims. (Cl. 271—43).

1. In a sheet feeding device, a support for a stack of sheets, upwardly extending guides for the opposed edges of the stack, one of the guides being transversely adjustable on the support and embodying a base extending longitudinally of the support, a pivoted stop member supported by the guide; an abutment stop for the forward end of the stack of sheets comprising a shank portion vertically disposed and slidably mounted in the support and having a projecting portion adapted to engage with the upper face of the stack, the abutment stop being positioned from the center of the forward end and toward one of the side edges of the stack; a carriage movable longitudinally relative to the stack support, the carriage including a slidable bearing portion engaging with a guide member associated with the support and an opposed bearing member for the carriage

Patent Papers

Printed copies of patents are furnished by the United States Patent Office at 10 cents each. Address the Commissioner of Patents, Washington, D. C. and enclose 10 cents for each patent paper wanted.



To help maintain the *Leadership* of letterpress

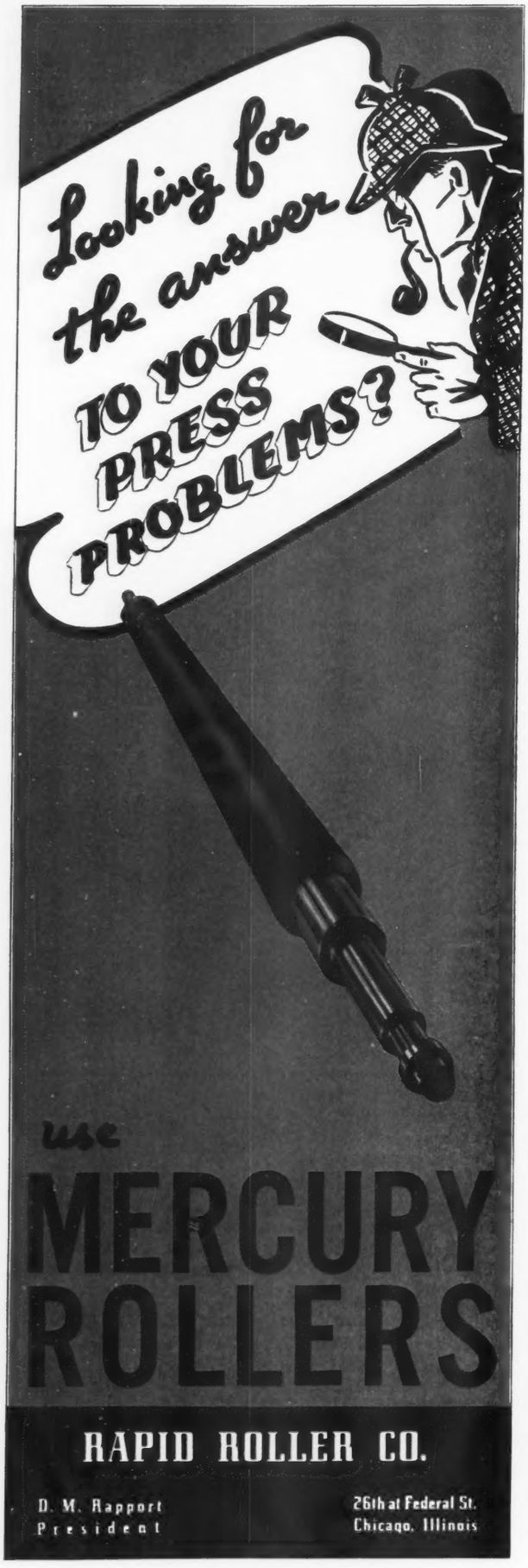
The art of printing has advanced on many fronts during the past decade. Machines and methods have made great strides. At this time, the manufacturers of Zomo Electric Zinc and A-Z Alloy take pride in reviewing the part which they have played in helping maintain the leadership of letter-press printing.

The Atlantic Zinc Works introduced the Electric Induction Process in the manufacture of engravers plates. This automatically controlled method of melting, blending, and casting zinc alloys, along with strict laboratory control of every sheet, has added greatly to the reliability of photo engraving. Backote, the acid resisting back, is improving working conditions and speeding work in the etching room.

You can order Zomo Electric Zinc and A-Z Alloy, plain or BACKOTED, from leading metal suppliers in the United States, Canada and England.

ZOMO ELECTRIC ZINC

A-Z ELECTRIC ALLOY



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IMPERIAL *laboratory controlled* **ZINC?**

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freely engaging with the support; a transverse member for the carriage; a member freely supported by the transverse member; a friction device attached to the last member and adapted to engage with a portion of the upper face plane of the stack of sheets, and substantially in advance of the carriage transverse member; means for reciprocating the carriage relative to the face plane of the stack of sheets and in a timed relation, and whereby the uppermost sheet of the stack is separated and advanced from the stack.

2,166,737. WEB SPLICING APPARATUS. Henry A. Wise Wood, New York, N. Y., assignor to Wood Newspaper Machinery Corporation, New York, N. Y., a corporation of Virginia. Application January 4, 1933, Serial No. 650,121. Renewed July 13, 1937. 17 Claims. (Cl. 242—58).

15. In a web splicing apparatus, the combination of a rotatable roll-supporting reel, web splicing means movable to operative and inoperative positions, means for rotating the reel so that the web-splicing means forces the web against the fresh roll, and means controlled by the force exerted by the web-splicing means against the web and fresh roll for stopping rotation of the reel.

2,167,810. METHOD OF WEB RENEWING. Alfred Henry Mackley, Bedford, England. Application March 29, 1937, Serial No. 133,747. In Great Britain March 31, 1936. 4 Claims. (Cl. 242—58).

1. A method of securing the extremity of a new web to a moving web which is nearly exhausted, which comprises gumming a tab of paper or like material with an opening in it over the extremity of the fresh web so as to fasten it down against the adjacent turn of the roll with the opening exposing a considerable area of the extremity of the web and not exposing the adjacent turn, applying gum or glue to the extremity through the opening and bringing the glued area into contact wth the old web, so that it is carried along thereby, whereupon the tab fractures.

2,167,823. SHEET FEEDING MACHINE. Headley Townsend Backhouse, London, England. Application August 20, 1937, Serial No. 160,149. In Great Britain August 25, 1936. 12 Claims. (Cl. 270—59).

1. In a stream feeder, a feed board, a sidelay comprising a side gauge mounted on the feed board and a plurality of overhead sheet gripping suckers spaced longitudinally moving forwardly and outwardly to draw the leading sheet of the stream sidewise against the side gauge during the forward travel of the sheet.

2,168,547. PAGE PASTING MECHANISM. Henry A. Wise Wood, New York, N. Y., assignor to Wood Newspaper Machinery Corporation, New York, N. Y., a corporation of Virginia. Application April 10, 1935, Serial No. 15,564. 5 Claims. (Cl. 270—5).

1. In a newspaper folder, the combination of means for folding the newspapers, a needle for perforating the sheets of the newspapers, located in a position to perforate them at the fold line, and means for extruding an adhesive through the needle in the perforations.

2,168,559. SHEET FEEDING APPARATUS. Paul Cernak, Montvale, N. J., assignor to Dexter Folder Company, New York, N. Y., a corporation of New York. Application April 27, 1938, Serial No. 204,521. 14 Claims. (Cl. 271—56).

1. In a sheet feeder, suction sheet feeding means, mechanism for imparting motion thereto including a driven element and driving connections with the suction sheet feeding means enabling motion to be discontinued while driving of the element continues, and means for discontinuing the sheet feeding action of the sheet feeding means while driving of the element continues comprising a valve for opening the sheet feeding means to atmosphere and means for preventing opening operation of the valve unless the sheet feeding means has been moved to a predetermined position by the mechanism.

Miscellaneous:

2,167,652. METHOD OF TESTING FOR INK REQUIREMENTS. Fred W. Hoch, Forest Hills, N. Y. Application June 19, 1936, Serial No. 86,203. 2 Claims. (Cl. 73—51).

1. The method of ascertaining the coverage of printing ink, which consists in taking a sample of the ink, applying the ink without pressure in separated film layers, each of different and determinable thickness on a trial sheet, selecting the desired thickness according to color and coverage, and determining the square inch coverage of the selected thickness of ink by dividing the amount of film thickness into a unit of cubical contents of the ink.

2,167,693. IMPERFECTION DETECTOR. William G. Slattery, Webster, Mass. Application June 3, 1938, Serial No. 211,628. 6 Claims. (Cl. 101—364).

1. The combination with a doctor blade and means for supporting it against a print roller or the like, of a series of contact arms engaging the blade, an electrical contact on each arm, a contact bar extending the length of the blade and insulated from the blade and having a series of contacts, one adjacent to each of the first named contacts, the contact arms, each being movable with a slight motion of the edge of the blade, to engage the respective contacts on the contact bar, and electrical connections between the contact bar and each individual contact on the contact arm to complete an electric circuit when any contact is closed to an alarm device, or the like.

2,167,746. SCORING MEANS IN PRINTING PRESSES. Don R. Donnell, Los Angeles, Calif. Application June 13, 1938, Serial No. 213,441. 4 Claims. (Cl. 93—58).

1. In a printing press having gripper fingers, an attachment comprising a framework, means for adjustably fitting the framework to the gripper fingers, the gripper fingers having two grooves in their faces for imprinting parallel stripes on the tympan, and scoring means aligned between these imprinted stripes.

2,168,400. METHOD OF SEPARATING BLANKS FROM SHEET MATERIAL. Arthur J. Evers, Westerly, R. I., assignor to C. B. Cottrell & Sons Company, Westerly, R. I., a corporation of Delaware. Application November 18, 1937, Serial No. 175,287. 4 Claims. (Cl. 164—18).

1. The method which comprises associating two elements with interposed sheet material and a frame shaped to a predetermined contour, advancing the two elements with the interposed sheet material and frame through a pressure means sufficient to cause the frame to separate a blank from the sheet material, removing one of the elements, the frame, the blank and the blanked-out material, and returning the other element through the pressure means and the removed element around the pressure means.

2,168,401. APPARATUS FOR SEPARATING BLANKS FROM SHEET MATERIAL. Arthur J. Evers, Westerly, R. I., assignor to C. B. Cottrell & Sons Co., Westerly R. I., a corporation of Delaware. Application November 18, 1937, Serial No. 175,288. 11 Claims. (Cl. 164—19.)

1. In combination, pressure means, unconnected upper and lower pressure plates adapted to receive sheet material between them, a shaped frame adapted to be removably positioned between the sheet material and one of the plates, and means for passing the pressure plates with the sheet material and frame through the pressure means to cause the frame to separate a blank from the sheet material, the upper pressure plate being removable to permit the removal of the shaped frame, the blank and the blanked-out sheet material.

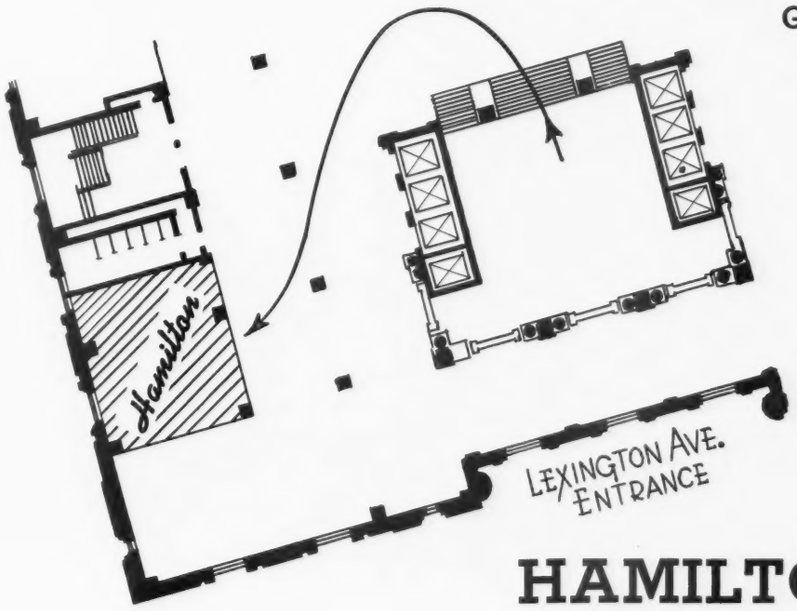
Plate Making:

2,164,603. SCREEN PRINTING MACHINE. John Sylvester Wheelwright, London, England, assignor to J. S. Wheelwright Limited, London, England, a British company. Application October 1, 1936, Serial No. 103,584. In Great Britain January 10, 1936. 7 Claims. (Cl. 101—114).

1. A screen printing apparatus comprising in combination a frame, means for securing a screen thereto, a table, a rail along one side only of the table, wheels on one side alone of the frame slidable along the rail, and lugs locking the frame against displacement along the rail except when it lies at an angle to the horizontal plane of the table.

(*Continued on Page 93*)

TURN LEFT as you enter the GRAPHIC ARTS EXPOSITION



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Metallurgical Progress

Enables manufacturer to satisfy search for better materials from which to build better printing machinery

By C. W. HARROLD*

PERHAPS one of the chief functions of an up-to-date engineer or industrial designer is to conduct a constant search for higher quality materials with which to build higher quality products. Particularly is this true in the case of manufacturers of precision machinery such as printing presses, where the objective in design, materials, and production methods is to achieve as near perfection as is humanly possible.

Smooth, uniform, high speed operation is the primary requisite of a modern offset printing machine. Such a machine must have accuracy and dependability built into it from base castings to fountain rolls. For example fountain rolls 72 in. long must remain accurate permanently in service without distortion to limits of one-half thousandth of an inch. And for such parts as gears, cams, and levers, design and properties of materials used are of utmost importance.

Metallurgical progress has been great during recent years and has made available to industrial designers a variety of high grade irons, steels, and alloys which offer service qualities not hitherto considered possible. This progress has been important to the printing machine industry and has been reflected in the improved performance and increased service life of the new model printing presses. Among the modern ferrous materials with improved engineering properties in our work is Meehanite Metal. Meehanite is a special process gray iron which provides engineering and physical properties not generally associated with cast irons. For example, Meehanite possesses a high modulus of elasticity (21,000,000) and a rapid rate of vibration damping which combination of properties is valuable in the achievement of improved design and operation of high speed offset printing machines. Practical experience has revealed that the high compressive strength of Meehanite iron (162,000 lbs. p.s.i. as cast to 265,000 lbs. p.s.i. heat treated) in conjunction with its tensile strength (50,000 lbs. p.s.i. as cast to 70,000 lbs. p.s.i. heat treated) provides an excellent criterion of strength for design purposes. For example, in parts subject to bending strains, the *average* of the tensile and compressive strengths of the material used indicates the strength factor.

Careful study and experience have revealed that the use of Meehanite gears (Fig. 1) has resulted in satisfactory wearing qualities and smooth operation. The improved wear resistance with Meehanite gears is such that the need for adjustment to remove back lash after the break-in period has been eliminated. Many of the gears are heat treated for higher strength and wearing hardness. Yet because of the uniform fine grain of the iron and the extremely fine distribution of the graphite these heat treated gears machine readily to the close tolerances necessary to a high precision press.

It is sometimes said that gray iron is unsuitable as a gear material because of its low ductility value. However, recent developments in testing metals have shown that resistance to distortion and fracture is not a simple property and that tensile test bar ductility tests *do not* predict action of a metal under the type of dynamic stresses encountered by gears in service.

Investigations have revealed that metals in the gray cast iron family show a proportional resistance to distortion and fracture which compares favorably with steel. Thus, our gears have been found to have an endurance limit which is 45% of their tensile strength, this figure comparing favorably with the accepted ratio of 40% for steel castings.

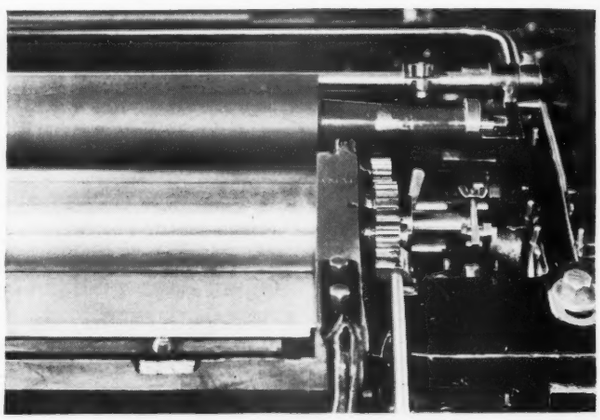

Fig. 2—Close-up of fountain roll shows smooth, uniform surface. This roll to operate properly must remain permanently straight and round within one-half of one thousandth of an inch (0.0005 in.)

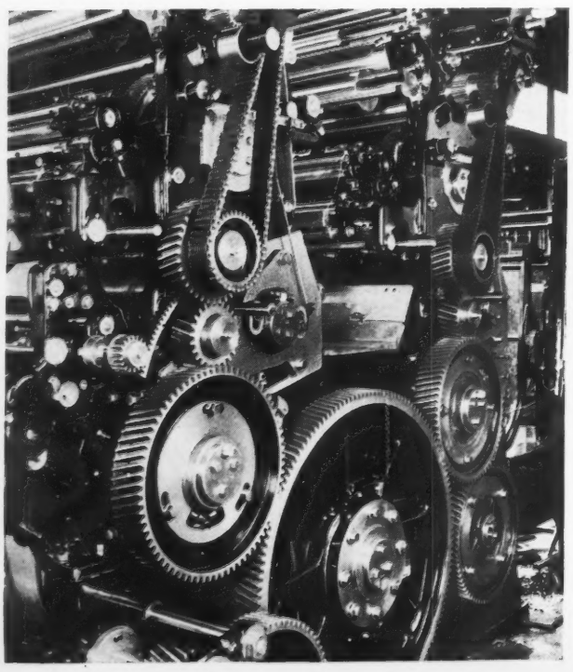

Fig. 1—Variety, size, and importance of printing press gears are emphasized by this view of one side of a new offset press. Nearly all the gears shown are now cast in Meehanite Metal.

Another part that requires accuracy to closely maintained tolerances are the fountain rolls (Fig. 2) already mentioned. The roll casting must be readily machinable to a fine, smooth surface and possess a dense, uniform metal structure, free from internal stress and flaws of any kind. Meehanite provides these qualities without any normalizing heat treatment because of the rigid metallurgical control in the manufacturing process.

Modern engineering methods require careful approach to the layout and material problems confronting equipment builders, and much can be accomplished by cooperation with modern foundry engineers and metallurgists.

*Chief Engineer, Harris-Seybold-Potter Company, Cleveland, Ohio.

Patents

(Continued from Page 91)

2,164,270. GRAVURE PRINTING. Fred George, Lakewood, Ohio, assignor to Interchemical Corporation, New York, N. Y., a corporation of Ohio. Application December 28, 1937, Serial No .182,125. 10 Claims. (Cl. 101—153).

1 In a machine for marking paper and the like of varying width, an engraved marking cylinder carrying marking composition, an impression cylinder, and means for preventing transfer of marking composition from the marking cylinder to such portions of the impression cylinder as are exposed to contact with the marking cylinder, the means comprising doctor blades of deformable resilient material impinging on the portions of the marking cylinder which contact the exposed portions of the impression cylinder, and air ducts in the inner ends of the doctor blades directed inwardly against the undoctored portion of the marking cylinder.

3. The method of marking paper with an engraved cylinder of greater width than the paper, which comprises applying marking composition to the entire cylinder, and thereafter removing marking composition from the surface and the cells of such portions of the cylinder as do not contact the paper.

2,163,948. PROCESS OF FORMING A PRINTING ELEMENT. William C. Huebner, New York, N. Y. Application September 20, 1937, Serial No. 164,721. 1 Claim. (Cl. 101—379).

The process of preparing a composed printing form for cylinder presses, which consists in preparing a plurality of printing elements each of which has a thin, inherently flexible metal shell with a metal printing face in relief; fixedly securing, under pressure, a separate, resilient, compressible and flexible back directly to the back of each of the flexible metal shells; and then securing, by an adhesive and under pressure, the several, individually flexible and resiliently backed printing element shells by imposition according to a predetermined layout, to a single flexible sheet metal base plate adapted to be wrapped around a printing press cylinder whereby to insure relative registration of the several individual composite printing elements on the base plate and in respect to the final printing form and to likewise insure, by means of the several individually flexible, resilient and compressibly backed composite printing elements, obtaining the desired printing pressure by each of the composite printing elements.

2,163,658. CASTING MACHINE FOR STEREOTYPE PLATES. Edward S. Bird, Worcester, Mass., assignor to Reed-Prentice Corporation, Worcester, Mass., a corporation of Massachusetts. Application October 8, 1937, Serial No. 168,050. 2 Claims. (Cl. 22—2).

1. In a machine for casting relatively thin plates, a pair of dies between which the plate is cast, one of the dies being movable for separation of the dies, a guard extending around the dies and mounted on the movable die, the guard being normally located in a position to shield the dividing line between the dies, and means responsive to the movement of the movable die in opening the dies for shifting the guard relative to the movable die into inoperative position for access to the dies.

2,163,062. PRINT REPRODUCING TABLE. Herman F. Riesenkonig, New York, N. Y., assignor to Lithoprint Company of New York, Inc., New York, N. Y., a corporation of New York. Application May 11, 1938, Serial No. 207,242. 7 Claims. (Cl. 101—131).

1. In an apparatus a self-contained lithoprinting table comprising an enclosed supporting frame, a work top mounted on the frame and adapted to be tipped to receive gelatine material and to be positioned substantially horizontal during print reproduction, a conduit associated with the under side of the work top for receiving a cooling medium, insulating means associated with the work top and positioned away from the under side of the top to allow the cooling medium to keep the work top at a low temperature; means mounted in the self-contained table for producing the cooling medium and for flowing the same through the conduit to one surface of the work top, and a second heat insulation means for maintaining the cooling medium in association with the work top and without substantial loss by heat transfer.

Plate Making:

2,166,153. MATRIX MAKING MACHINE WITH PRESSURE INDICATOR. William F. Huck, Richmond Hill, N. Y., assignor to R. Hoe & Co., Inc., New York, N. Y., a corporation of New York. Application August 3, 1935, Serial No. 34,520. 8 Claims. (Cl. 265—47.)

1. In a matrix rolling machine having a rotatable roller cooperating with a reciprocable table to press a matrix therebetween, a roller supporting mechanism including, means to receive upwardly directed pressure from axially spaced apart portions of the roller, means to adjust the pressure at these roller portions, and means operatively connected to each of the pressure receiving means to indicate the pressure received thereby at these roller portions and the pressure imposed upon the matrix by the entire roller.

2,168,407. APPARATUS FOR ETCHING PLATES. Louis E. Holland, Kansas City, Mo. Application September 3, 1935, Serial No. 38,926. 4 Claims (Cl. 177—311.)

1. In a circuit for supplying current to a load connected therewith, a current supply connected with the circuit, a switch connected in the circuit between the current supply and the load, a signal, a signal circuit connecting the signal with the current supply circuit for supplying a signal voltage when the switch is opened, a slowly opening switch in the signal circuit, and common means for closing the main switch and the signal switch and for effecting opening of the main switch after a predetermined time interval and permitting delayed opening of the signal switch.

2,168,444. PROCESS OF PRODUCING PRINTING PLATES. Elsmore D. Lake, Oakland, Calif. Application May 25, 1936 Serial No. 81,620. 2 Claims. (Cl. 95—5.1.)

1. The method of multicolor printing to reproduce an original image comprising a plurality of distinct differently-colored component field areas and as area of another color bordering one of the field areas, which consists in preparing a single master drawing of the image and, in doing so, forming the field areas of the drawing in primary colors irrespective of the colors in the original and forming the border in black, photographing the master drawing through each of a set of color filters separately and in succession to produce a plurality of separation negatives, said set having the same number of filters as there are field areas in the drawing, and each of the filters being selected to record the border and only one of the field areas, photographically reproducing each negative upon a separate printing plate, etching the plates, and printing in super-imposition each plate with an ink corresponding in color to that of the field area of the original image which such plate represents.

2,168,548. STEREOTYPE PLATE FINISHING AND COOLING MACHINE. Henry A. Wise Wood, New York, N. Y., assignor to Wood Newspaper Machinery Corporation, New York, N. Y., a corporation of Virginia. Application November 24, 1934, Serial No. 754,579. Renewed July 18, 1938. 9 Claims. (Cl. 29—21.)

1. In a stereotype plate cooling machine, the combination of an arch having an internal configuration for fitting the exterior of a shaved printing plate, a saddle in the arch having an outer surface for fitting the interior of the shaved printing plate, means for moving the plate between the saddle and arch longitudinally, means for then contracting the plate by moving its opposite edges toward each other, means for moving the saddle radially fully into the arch to clamp the plate thereagainst, means for cooling the plate, means for withdrawing the saddle, means for again operating the contracting means to contract the plate, and means for moving the plate out of the arch.

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Printing Presses:

2,156,385. PRINTING ROLL. Abraham L. Freedlander, Dayton, Ohio, assignor to The Dayton Rubber Manufacturing Company, Dayton, Ohio, a corporation of Ohio. Original application March 9, 1934, Serial No. 714,838. Divided and this application October 14, 1935, Serial No. 44,825. 2 Claims. (Cl. 91—67.8.)

1. In combination in a printing roller, a metal supporting rod having a sand blasted surface; a hard rubber cover cemented thereto; a rubber base stock of relatively soft rubber cemented and vulcanized thereto; and a relatively thin flexible cover sleeve comprising a tube mounted on the soft rubber, the tube having an outer surface that is mirror-like, tough and smooth, and an inner surface that is relatively rough.

2,158,474. INKING ARRANGEMENT FOR ROTARY PRINTING PRESSES. William N. Misuraca, Merrick, N. Y., assignor to General Printing Ink Corporation, a corporation of Delaware. Application March 18, 1937, Serial No. 131,590. 9 Claims. (Cl. 101—350.)

1. In a printing press, the combination with a fountain roller, and means for imparting step-by-step rotative movement to the fountain roller, of an ink-distributing roller, a ductor roller for periodically transferring ink to the ink-distributing roller, an auxiliary roller for transferring ink from the fountain roller to the ductor roller, and means independent of the exterior surface of the fountain roller for imparting rotative movement to the auxiliary roller.

2,159,029. WEB-MARKING MECHANISM. Cutler D. Knowlton, Beverly, Mass., assignor to Hoague-Sprague Corporation, Lynn, Mass., a corporation of Massachusetts. Application July 20, 1937, Serial No. 054,614. 13 Claims. (Cl. 93—93.)

1. In a machine for operating upon web-material, rotatable rolls having surfaces for continued contact with opposite sides of the web, marking means carried by one of the rolls and projecting outside its web-contacting surface, the marking means being movable into engagement with the web, and means carried wholly by the web-contacting rolls for actuating the marking means.

2,159,447. PRINTING METHOD AND APPARATUS. Irving F. Niles, Lakewood, Ohio, assignor to The Impress Company, Inc., Rochester, N. Y., a corporation of New York. Application June 25, 1936, Serial No. 87,243. 19 Claims. (Cl. 101—186.)

1. Printing apparatus comprising a printing element, an impression element for pressing a sheet against the printing element, sheet gripping means mounted on and moving with the impression element to hold a sheet on and carry it along with the impression element, one of the elements being substantially in the form of a cylinder adapted to roll over the other of the elements, means for moving one of the elements relatively to the other in one direction and for simultaneously turning the cylindrical element in substantial synchronism with the relative movement between them through a rotary extent substantially different from a single complete revolution, and means for moving one of the elements relatively to the other in the opposite direction without substantial turning of the cylindrical element during such opposite directional elative movement.

2,160,527. PRINTING PRESS. Isidor Tornberg, Plainfield, N. J., assignor to Wood Newspaper Machinery Corporation, New York, N. Y., a corporation of Virginia. Application June 9, 1936, Serial No. 84,244. 6 Claims. (Cl. 270—5.)

3. The combination with a four color printing unit having two inside adjacent impression cylinders spaced apart, means for leading a web up between the impression cylinders and entirely out of printing contact with both of them, and means for leading another web through one of the color printing units.

2,160,613. ROTARY PRINTING PRESS. Curtis S. Crafts, Oak Park, Ill., assignor to The Goss Printing Press Company, Chicago, Ill., a corporation of Illinois. Application November 19, 1936, Serial No. 111,571. 16 Claims. (Cl. 101—247.)

16. In a rotary printing press in combination, a printing couple comprising a plate cylinder and an impression cylinder, eccentric bearings for the plate cylinder mounted in the frame and rotatable to regulate the impression squeeze, a variably positionable device for stopping the rotational movement of the eccentric bearings to determine the amount of the impression squeeze, the device being located approximately in the common axial plane of the two cylinders, and on the opposite side of the plate cylinder axis from the impression cylinder, and means for rotating the bearings until stopped at impression by the stop device and for subsequently applying rotative pressure to the bearings against the stop device in the opposite direction to the movement of the plate cylinder at the line of impression contact of the cylinder.

2,162,425. SETTING GAUGE FOR RESILIENT ROLLERS OF PRINTING PRESSES. Sherman E. Faught, New Orleans, La. Application March 30, 1938, Serial No. 199,045. 4 Claims. (Cl. 33—182.)

1. A roller setting gauge comprising an elongated member of compressible material adapted to be placed between a pair of rollers and containing liquid, said member having a number of conduits therein in communication with each other at the ends of the member, a tube connected with one end of the member and in communication with the conduits therein, a sight gauge connected with the outer end of the tube and means in one of the conduits for preventing compression of said one conduit.

2,161,943. INK FOUNTAIN. Carl D. Baue, St. Louis, Mo. Application January 17, 1938, Serial No. 185,350. 1 Claim. (Cl. 101—364.)

An ink dam including an elongated back strip having two spaced rows of transversely aligned internally threaded apertures, a plurality of elongated blade-members each having at its one end a pair of apertures in registration with a pair of transversely aligned back strip apertures, a reference strip of substantially the same length as the back strip and of substantially narrower width, said reference strip having a single row of apertures in registration with one of the rows of apertures of the back strip, and screw means extending through the registering apertures for holding said back strip, blades, and reference strip in assembled relation.

2,161,866. PRINTING PRESS. Arthur S. Huckins, Philadelphia, Pa. Application June 27, 1935, Serial No. 28,734. 8 Claims. (Cl. 271—27.)

1. In a paper feed, a pape holder adapted to support a stack of paper on edge, and a floating separator pivotally supported at its rear, having its free end free to rise and fall on the stack, and having a hook engaging the front of the stack with the shank of the hook resting on the top edges of the sheets of the stack to provide a constant deptb of penetration for sheets of variable cut.

2,164,480. BLANKET WINDING FOR A PRINTING CYLINDER. Isidor Tornberg, Plainfield, N. J., assignor to Wood Newspaper Machinery Corporation, New York, N. Y., a corporation of Virginia. Original application May 18, 1936, Serial No. 80,295. Divided and this application December 31, 1936, Serial No. 118,520. Renewed November 25, 1938. 5 Claims. (Cl. 101—405.1).

1. A reel rod for a printing cylinder, capable of winding up thereon a blanket or draw-sheet, and having one end loosely supported and the other end eccentrically mounted, and means for rotating the rod.

2,164,363. PRINTING PRESS. Gilbert C. Waters, Rochester, N. Y. Application December 24, 1936, Serial No. 117,439. 15 Claims. (Cl. 101—212).

1. A printing press comprising an impression member and a printing member between which sheet material may be fed, means for driving the members in directions such that the surfaces engaging the sheet material travel in the same direction and at speeds such that the opposed faces of the members in engagement with the sheet material travel at approximately the same speed, the driving means including a cylindrical driving pulley through which motion is transmitted to one of the members, and means for effecting minute increases or decreases in the effective diameter of the pulley to effect minute changes in the speed of the member driven by the pulley to equalize the speeds of the material-engaging surfaces of the members.

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Offset Press Installations

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Con. P. Curran Printing Co., Eighth & Walnut Streets, St. Louis, Mo , 17x22 Webendorfer Offset Press.

Albert H. Vela & Co., 305 East 46th St., New York, N. Y., the second 22x29 Webendorfer Offset Press.

Andors & Co., 37 East 18th St., New York, N. Y., has just installed their second 17x22 Webendorfer Offset Press.

Snyder Press, 1825 Liverpool St., Pittsburgh, Pa., 17x22 Webendorfer Offset Press.

General Printing Co., 17 West Lawrence St., Pontiac, Mich., 17x22 Webendorfer Offset Press.

Ashland High School, Ashland, Ohio, offset press.

Recent Linotype Installations

The Indianapolis *News* has ordered ten Blue Streak Model 8s; Braunworth & Company, Inc., Bridgeport, Conn., eight Linotypes; Newark (N. J.) *Evening News*, three Blue Streak Model 29s; Des Moines (Iowa) *Register* and the *Tribune*, two Blue Streak Linotypes; Oklahoma City *Oklahoman* and the *Times*, two Blue Streak Model 30s; Forth Worth *Star-Telegram*, two Two-in-One Blue Streak Master Model 31s; Park Ridge (Ill.) *Advocate*, two Linotypes; Honolulu *Advertiser*, two Linotypes.

Other Linotypes recently have been installed or ordered by the Ashton (Iowa) *Booster;* Gloucester (Va.) *Free Press;* Samuel R. Guard & Sons, Inc., East Aurora, N. Y.; Frank T. Fowler, Waukegan, Ill.; Lexington (S. C.) *Dispatch-News* and the Bruner Press; Syracuse (N. Y.) *Post-Standard;* W. C. Dunbar Company, New Brunswick, N. J.; Cushing (Okla.) *Daily Citizen;* Will A. Beach Printing Company, Sioux Falls, S. D.; Steele (N. D.) *Ozone;* United States Marine Corps, Quantico, Va.; Bay Shore (N. Y.) *Sentinel;* Concordia Publishing House, St. Louis; Lawrence Holt Tannehill, Chicago; War Department, Dayton, Ohio; Standard Printing and Lithographing Company, Houston, Tex.; Marion County *Democrat*, Salem, Ill.; Economy Printing Company, Syracuse, N. Y.; Cincinnati *Billboard;* Jackson County *Democrat*, Newport, Ark.; Commercial Printing Company, Newnan, Ga.; Rosen Printing Company, Buffalo, N. Y.; Elwood (Ind.) *Call-Leader;* Hereford (Tex.) *Brand;* Brooklyn Institute of Arts and Sciences, Brooklyn, N. Y.; Strathmore Co., Aurora, Ill.; San Francisco *Chronicle;* Silver Creek (N. Y.) *News-Times;* Service Printers, Inc., Chicago; Anniston (Ala.) *Star;* Lafayette Typesetting Co., Lafayette, Ind.; Sebastian County *News*, Greenwood, Ark.; *Phaneuf Press*, Nashua, N. H.; John S. Poynor, Alvin, Texas; Magoffin and Doye, Hollywood; Eagle Rock (Calif.) *Sentinel;* Salem (Ore.) *Statesman;* Freeport (Ill.) *Journal-Standard;* Pentecostal Holiness Church; Inc., Franklin Springs, Ga.; Goldenetz Printing Company, Phoenix, Ariz.; Green Bay (Wis.) *Press-Gazette;* William Carnal!, Los Angeles; Wilson H. Lee Company, Orange, Conn.; Dixie County *Advocate*, Cross City, Fla.; Florida State Marketing Bureau, Jacksonville, Fla.; Paradise of the Pacific, Honolulu; Owen Sound (Ont.) *Daily Sun-Times;* Miller Print Shoppe, Ottawa, Ont.; Niagara Falls (Ont.) *Review;* Rolph-Clark-Stone, Ltd., Toronto; Richardson, Bond & Wright, Ltd., Owen Sound, Ont.; Kanadsky Gudok, Winnipeg; Moncton (New Brunswick) *Transcript;* Winchester (Va.) *Evening Star;* Shepherdstown (W. Va.) *Independent;* Castro & Harris, Inc., Spencer, W. Va.; State College Print Shop, Raleigh, N. C.; The Linotypers, Paterson, N. J.; Lenz & Riecker, Inc., New York City; Goodrich Composition Company, Inc., New York City; Advertising Composition, Inc., New York City; New York *Herald-Tribune;* Walter Typographic Service, Inc., New York City; Joseph F. McQuade, New York City; Niagara Falls (N. Y.) *Gazette;* Norfolk (Va.) *Ledger-Dispatch* and *Virginian-Pilot;* Morristown (N. J.) *News* and Morris Plains *Chronicle;* Long Branch (N. J.) *Daily Record;* Commercial Printing House, Lancaster, Pa.; Kutztown (Pa.) *Patriot;* George Hill Saxton, Franklin, Pa.; Elizabeth City (N. C.) *Advance;* The Book Shop of the Medical Field Service School, Carlisle, Pa.; Service Composition Company, Baltimore, Md.; Baltimore Type and Composition Company, Baltimore, Md.; J. B. Lyon Company, Albany, N. Y.; Allentown (Pa.) *Morning Call* and *Evening Chronicle;* Taunton (Mass.) *Daily Gazette;* B. M. Chandler Company, Somerville, Mass.; Chase Printery, Putnam, Conn.; Laconia (N. H.) *Evening Citizen;* Deep River (Conn.) *New Era;* Truscon Steel Company, Youngstown, Ohio; What Cheer (Iowa) *Patriot-Chronicle;* Waukesha (Wis.) *Daily Freeman;* Frank T. Fowler, Waukegan, Ill.; Wausau (Wis.) *Pilot;* Wausau (Wis.) *Record-Herald;* Vocational High School, Toledo, Ohio; Schneider Printing Company, Inc., St. Louis, Mo.; Sioux Falls (S. D.) *Argus-Leader;* Seymour (Ind.) *Daily Tribune;* Sessions Printing Company, Inc., Sioux Falls, S. D.; Bickford Printing Company, Racine, Wis.; Rock Island (Ill.) *Argus;* Central High School, Pueblo, Colo.; Peoria Typesetting Company, Peoria, Ill.; Polo (Ill.) Tri-County

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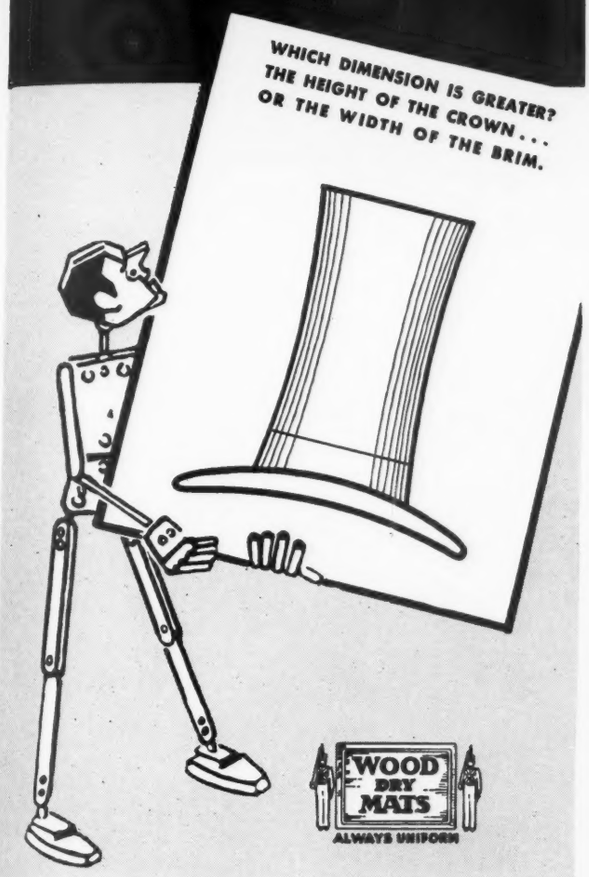

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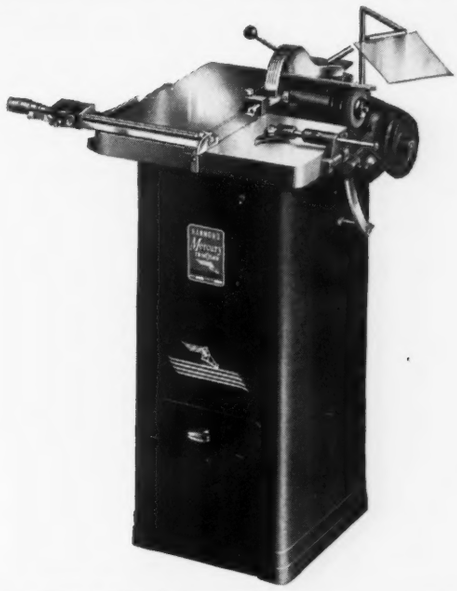

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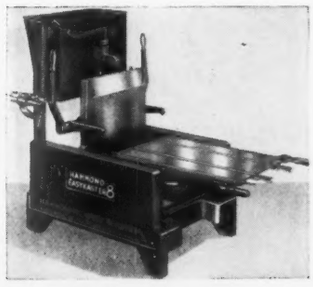

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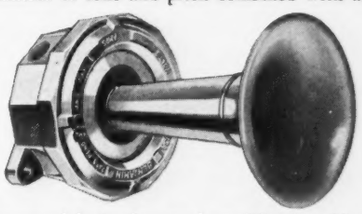
Twenty-five Years' Service

James E. (Jimmy) Greene completed the twenty-fifth year of service with Geo. H. Morrill Co. Div., General Printing Ink Company, on August 10. He is representative of the company in Wisconsin and Illinois territory. Mr. and Mrs. Greene and daughter Mary Ellen, make their home at 4422 N. Cramer St., Milwaukee. A son, Lieut. R. J. Greene, is stationed at Pensacola, Fla., with the U. S. Naval Air Force.

Benjamin Pressroom Howler Signals

An improved Signal System is announced by Benjamin Electric Mfg. Co.

Greater sound penetration is secured in the howler by increasing the sound volume of the unit by 100% and engineering a new tone that gives the signal greater audibility. The improved signal is obtained through a new control of tone and pitch combined with an



improved design for sound amplification. New types of form wound coils further contribute to the improved tone signal.

Turning a threaded ring detatches the howler from its base. The entire assembly plugs into the base socket in much the same way as any ordinary household appliance plugs into a wall outlet.

A bulletin on industrial howlers can be obtained by writing direct to the Benjamin Electric Mfg. Co. or in care of *Printing* EQUIPMENT *Engineer.*

Several production and mechanical executives present their ideas in this issue with respect to improved production technique. The editor of P-Double-E invites you to do likewise. Just have it set on a machine and send proof to the editor, or send a pencil memo.

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"Windy Bill" Rides Again

By L. H. HOUCK

"WINDY BILL" Smith, energetic and sometimes eccentric line-composing machinist, his wife Mrs. Windy Bill, and little daughter Pearl were parked in the family car at the Wildwood airport. It was Sunday afternoon.

"I'm goin' to walk around a bit," Windy told his wife, "and see what's new in air circles."

He moseyed around uncertainly in the crowd that gaped at planes landing and taking off. Windy had his hands clasped behind his back—his gimlet eyes bored into everybody and everything.

Suddenly he stiffened. This was always a sign he had seen something new—at least new to him. Directly in his line of vision was an aviator attired in complete flying togs for open-ship flying. Strapped to his back and hanging down to his posterior section was a bulky and awkward looking seat-packed parachute.

"What's that guy got strapped on his back?" Windy jabbed a hard elbow into a man at his side. Recovering from the shock the man eyed Windy up one side and down the other before he answered.

"That's his parachute."

"Parachute?" It didn't seem to register with Windy. The man continued.

"Sure. That's what they bail out in when something happens. They pull a ring and it opens up and they float down easy like. If it don't open, well—they just come down."

"Do they have to wear that outfit?" Windy asked.

"I don't think it's a rule or a law," answered the man.

"Then it must be just an ethic," said Windy with a tone of finality. "Where does he put it when he's running the plane?"

"He sits on it." answered the man.

"In other words," said Windy, "his parachute is strapped to his setter all the time? Boy is that an idea? Let me out of here."

Windy started working both arms like an amateur swimmer as he ran through the crowd. He made it back to his car in nothing flat. Paying no attention whatever to his wife or child he leaped into the driver's seat, turned ignition, touched the starter and roared away from the airport in the direction of his home.

"Mommy," asked little Pearl, "What's the matter with Poppy?"

"Hush, child," shushed Mrs. Windy Bill, "Your father has just invented something and we'll all be rich in a few days."

Once in the house Windy started for a bedroom closet, where he dug out a more or less clean pair of aged overalls. From there he rushed to the living room. Mrs. Windy saw him turning every cushion over and over. Finally he selected a sofa pillow, on which had been embroidered, "God Bless Our Home."

With the sofa pillow and the pair of overalls under his arm, he picked up his wife's sewing basket as he went out. Almost in a dead run he headed for the garage. It was several hours later—he returned to the house and resumed his normal demeanor.

Monday morning came as Monday mornings will, and Windy Bill arrived at his bench in the composing room of the Wildwood *Daily Record*, with an extra package under his arm.

Pandemonium reigned in the *Record* composing room that morning. They did not know that Windy Bill, the man of Destiny, had arrived with a package that would change the printing industry from a discontented giant into a purring kitten.

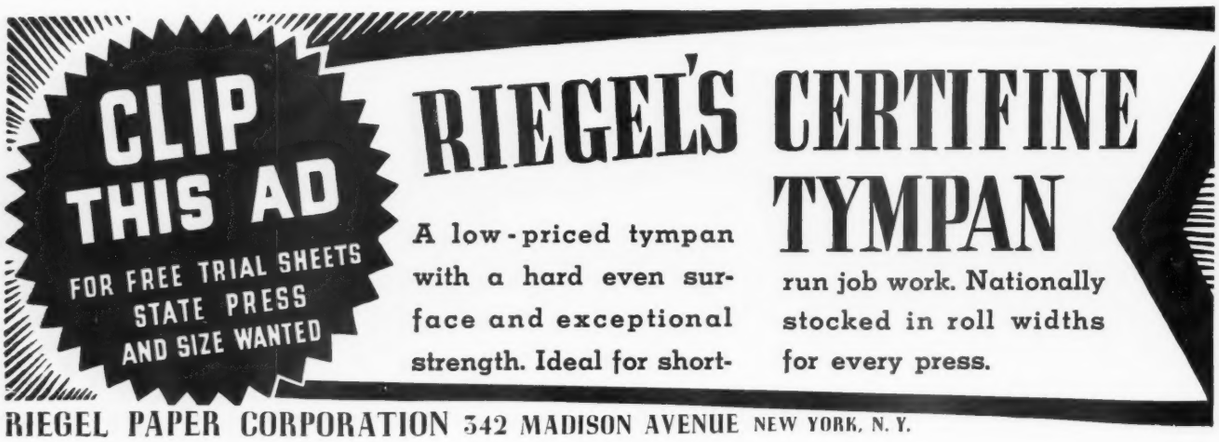
Clarence Strickland, ordinarily a docile linotype operator, had the chair from in front of his machine down on the floor and was busily engaged in sawing off the legs. "Been here nigh onto ten years," the old operator said, "and I ain't never got no cheer 'd suit me yet."

A battle of words and gestures was in full swing between Vernon Catfish and Mac McCormack over the title to a sponge rubber chair cushion. Another operator was over in a corner pawing through a pile of chairs and cushions to find a cushion and a chair suited to his personality so he could start grinding out the early markets.

Having lost both the argument and the cushion, Mac went back to his headletter mill.

"Somebody ought to invent a cushion that nobody could steal and wouldn't get lost," Mac shouted to nobody in particular.

"It's already did." Windy Bill had the floor. The expectant chairman, who had been on the verge of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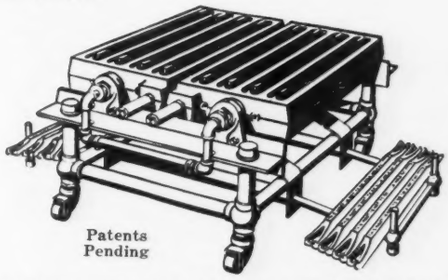
The mold shown below is the Twin-eight equipped wi'h cradle to gather the ingots when dumped.



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Factory: East Rutherford, N. J.

calling time, halted in the act to see what was in store for the relief of composing operators.

Windy Bill brought out a package and unwrapped it. The operators crowded up close.

Out came a pair of overalls, ordinary overalls, clean but very old. From the front as he held them up they appeared no different than any other pair of overalls.

"Boo! B-o-o!" shouted the printers, as printers will.

"Wait." Serious-faced Windy Bill held his audience with his magnetic personality. The suspense was terrific. Slowly and carefully he turned the overalls around.

A cry of amazement and astonishment went up from the assembled operators. Viewed from the rear these overalls which Windy Bill displayed so proudly were unlike any overalls ever seen before.

Windy Bill had sewed his wife's favorite sofa pillow square on the seat of the overalls. On the cushion, which was firmly affixed with white thread to the seat of the overalls, in red embroidery thread, were the words, "God Bless Our Home."

"There you are," Windy crowed proudly. "Windy Bill's Cushion-Seat Overalls—no cushions to lose—always where you want it—always ready for use."

The chairman bawled "Time!" and another newspaper day started.

Some Precautions In Printing With Gold Ink

SINCE publication of the article about gold ink printing in the April issue, *Printing* EQUIPMENT *Engineer* has received queries for additional information. The answers to these queries have been assembled into one article and are published for the benefit of those executives interested in gold ink technique:

Large users of gold ink start with the paper, all of which for a run should be as uniform as possible in surface and finish so that the viscosity of the ink, having been suited to the paper's absorbency, will remain suitable for all the sheets of the run. If the ink were suited to a soft finish and say the first thousand sheets only were soft while the remainder of the stock proved to be hard or tinny the ink would have to be altered. The problem resolves itself into watching the ink first to suit it to the paper and watching the paper to make sure it does not vary, and consequently, changing the ink if it does.

At the same time the temperature should not vary greatly because a change of 10 deg. in temperature changes the viscosity of the ink one step in the scale of viscosity or in other words, heat makes the ink softer and thinner and cold makes it heavier and stiffer.

Before starting a run, the printer plays safe if he shows a proof to the customer so there can be no misunderstanding as to possible results on the paper chosen. Only coated (enamel) paper yields a reasonably satisfactory effect in one impression of gold ink but two impressions are better. On all other paper, two impressions are needed. Some print two bumps in gold ink, others print gold over yellow base size. The yellow is cheaper, but the gold looks better. A stock with a little lustre, sheen or gloss helps out the glitter of the gold. So it is better to pull an average (not a doctored proof) on the paper to be used so the customer may know what to expect.

The most favorable temperature is 75 deg. F.

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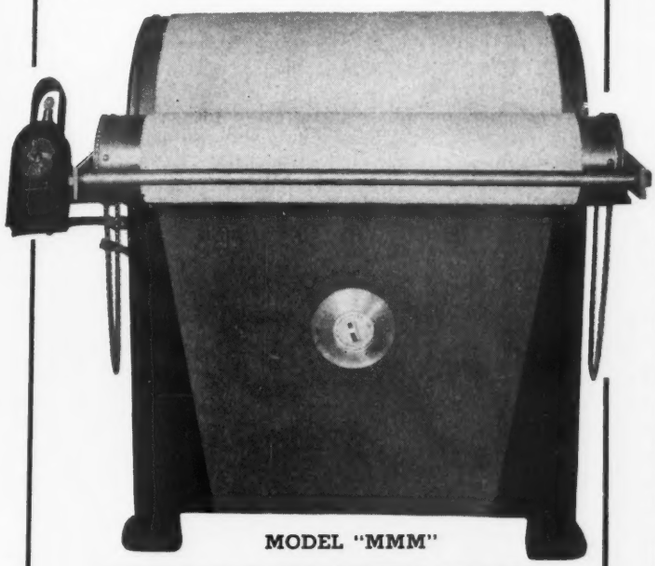

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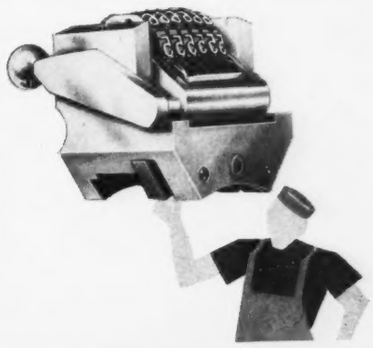

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Which?

(*Continued from Page 78*)

do not use the makeup tables unless we print over 34 pages.

Pictured are Hamilton standard style A Overhead banks or brackets, 10 ft. long. These are outfitted with standard Hamilton trays. The banks or backets can be secured in lengths from 4 ft. to 12 ft. A wide selection of trays is available. In position over the foot of the chases, the distance from the floor to the bottom edge of the tray is 43 in. This provides about 3½ in. between top of chase and bottom edge of the tray.

The frames which we had made up are described as follows (see Fig. 2): The bottom pieces resting on the floor and extending from front to back of the frame are made up from ½ in. by 3 in. by 48 in. pieces of steel. The three upright pieces at each end of the frame (*i.e.*, the center vertical pipe and the two angled pipes) are cut from 1¼ in. pipe welded to the floor piece and the two angled pieces are welded to the center vertical pipe where they meet just under the material tray. The center vertical pipe is 58 in. in length from bottom to top. It should have, however, a 2 or 3 in. offset or "dog-leg" just above the welded part. Trucks are too crowded in stand as pictured and this offset will give 4 in. to 6 in. more distance between uprights, which will facilitate pushing trucks back in line. The illustrations do not show this offset as we discovered our error after the stands were made.

The X cross pieces shown in Fig. 2 are made from ⅜ in. by 2 in. steel and are welded at each end to the center upright pipe and where they are crossed in the center. The length of the cross pieces just described will be determined by the length of overhead material tray to be used, or rather, by the number of trucks which are to be placed between the end pieces.

After the frames as described had been delivered from the machine shop, we set about applying fittings to support the material trays at the top and the dead-slug bins at each end. On the top of each center pipe we cut threads and screwed on a 1¼ in. by ½ in. pipe reducer. To this reducer was attached a 6 in. pipe nipple topped with a standard pipe cap. A hole is drilled through each of these caps to accommodate 1/16 in. Swedish wire cable on which to hang dummies.

In two composing rooms which the writer visited recently, Monotype and Elrod base were kept in sheet iron bins mounted on top of the material trays. The bins were open front and back. In the event that the base bins are used, one can use a Tee fitting and two short nipples instead of a pipe cap on the top of each of the 6 in. nipples, so as to run Swedish cable in front of and back of the bins for the accommodation of the makeup dummies.

To support the Hamilton dead-slug bins at each end of the frame, a piece of steel mounted 3 ft. from the floor and measuring ½ in. by 2 in. by 52 in., is bolted through the three uprights.

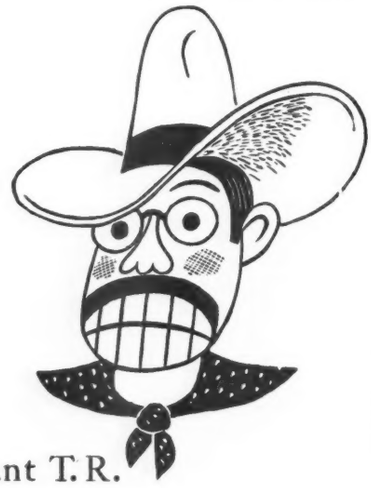
It is practically an impossibility to overturn a stand made up as described and the stands can be moved readily for a more advantageous arrangement if desired.

A further thought in connection with the use of these stands will be found by looking at Fig. 2. On the floor we have fastened a wood strip to function as a bumper when the trucks are pushed into their stalls. The wooden strip, or a piece of angle iron should be so placed that the screws at the foot of the chases will just meet when trucks are lined up on both sides of the stand.

In making the alterations, we decided, as stated above, to retain the use of present equipment as much as possible. To provide the lower material tray position for the three 10 ft. makeup tables we removed the two sockets at each end of the table through which the 1¼ in. pipe ran to hold up the overhead material trays. At both the top and bottom of the table frame, we fastened with four ½ in. bolts, a piece of steel ⅞ in. by 2 in. by 35 in. with one end projecting out from the body of the makeup table at the back. It will be necessary to make a ½ in. offset or "dog-leg" in this piece so the holes in the overhead tray bracket will line up with the upright supporting pipe. The cast iron eye pieces were removed from the makeup tables and were fastened to the protruding flat pieces of steel to serve as sockets for the upright supporting pipes which hold up the material trays. In the instance of the makeup tables, the use of which we retained, we make up five pages on the table and place five trucks at the back of the table, thus utilizing both sides of the overhead material trays.

• *Production and Mechanical Executives*

will appreciate reading about some production improvement devised in your plant—just as much as you like the several illustrated articles in this issue which have been prepared by executives who want you to have the benefit of their study.



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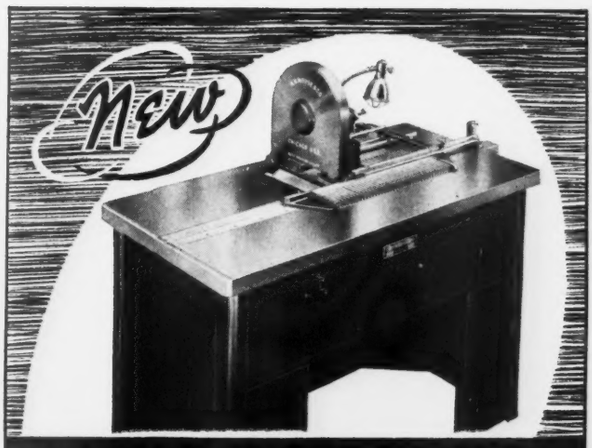

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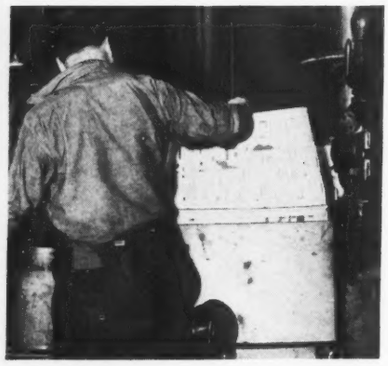

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Getting Off On The Right Foot

AT SOME time or other, have you been so eager to be promoted to a position of supervisory responsibility that you accepted the appointment without first discussing the executive prerogatives which should accompany the new position? After accepting the appointment have you discovered that it is now too late to get those prerogatives?

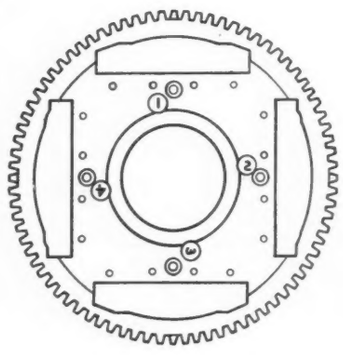
When the appointment of a departmental foreman, for instance, is under consideration, discussion before mutual acceptance of the appointment should be engaged in by the parties concerned. Acceptance of the appointment need not be rushed without deliberation but in most cases should be arrived at only after mutual discussion.

The appointment and its opportunities should be considered carefully by the proposed executive so that he and his superior officer will start their relationship in the proper manner. Just like anything else, it may be too late to secure reasonable and essential prerogatives after acceptance of the appointment. The proposed mechanical executive should consider that inasmuch as he is being considered for the appointment that there is no necessity for an immediate yes or no answer. Another thought is that the increased salary, of course, is fine, but the conditions under which you will work on your new job are of far more importance. Several executives of the writer's acquaintance are not happy in their work just because of oversight in securing reasonable prerogatives at the time when they can best be obtained.

Speaking particularly of the printing plant manager, he is fully aware that he must delegate production responsibility to a department head. He is not always especially concerned, however, as to the exact conditions under which the new executive will function—that is, nothing much specific is mentioned at the time of hiring as to just what are the prerogatives to be permitted by the manager. If the manager does not voluntarily mention all of the specific prerogatives to accompany the new position, it may be caused by his (the manager's) lack of experience in such matters. The thought is that many plant managers are no more experienced at hiring plant executives than the proposed departmental executive may be at supervising men and production. Both can learn, however, if they are made of the "right kind of stuff."

One of the finest printing production executives I know was being considered by a manager to be composing room superintendent. He had foresight enough to know that he should be granted certain prerogatives commensurate with the responsibilities involved. Also, he felt that these prerogatives should be granted before accepting the appointment. Details in connection with the appointment proceeded amiably enough until the proposed executive brought up the question: "*Do you want me to be an executive or a working foreman?*"

The business of the company had been expanding for some time. It was evident that the present superintendent could not control the men in the department,



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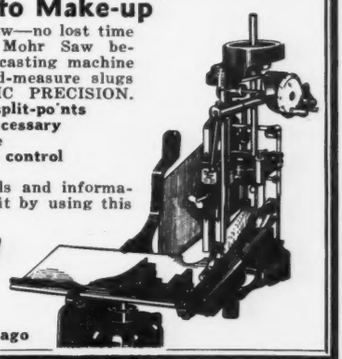

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nor was he securing production at reasonable cost. The manager attributed the failure of his present superintendent to old age. The truth was that the superintendent's mental equipment had become obsolescent and he did not possess the facility of adjusting his supervisory ability to changing conditions. Some men are like that—they just can't enjoy doing things in a bigger or a better way.

The man whom the manager had asked to be the new composing room superintendent was level headed enough to know that he could not exercise any greater number of prerogatives than the manager was willing to grant. He was that honest with himself. It seemed to him that the best plan would be to have a thorough understanding before accepting the appointment.

After asking the question: "Do you want me to be an executive or a working foreman?" the proposed executive stated if he wanted him to be an executive he would be more than glad but on the other hand, if he wished him to function merely as a working foreman (just as was the present superintendent) then he would thank him for his consideration and return to his job as working foreman in the ad alley.

He proposed to the manager that he would accept the appointment for a 30-day trial period as supervising executive. At the end of that time he would get in touch with the manager for his decision to be based upon the results achieved. Also, he pointed out to the manager that he would be valuable in a supervising capacity because he could more than save the cost of the difference in the increased salary which the manager offered him. Not only that, he thought he could organize production so the many complaints from advertisers and executives in associated offices would be eliminated. He told the manager he could do more with his eyes than with his hands. The manager accepted the proposal.

At the end of the 30-day period the new composing room superintendent asked the manager: "Do you want me to continue as composing room superintendent or shall I return to my old job as working foreman in the ad alley?"

The manager was pleased with results. He told the new composing room superintendent to continue with his work and to appoint a new ad foreman. The relationship between the two men has been a fine one. Incidentally, the manager has been made general manager of the printing plant. The former composing room superintendent's new office door bears the title "Production Manager" immediately beneath his name.

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